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SYMPOSIUM.

NATIONAL INSURANCE AND TUBERCULOSIS.

A COLLECTION OF REPRESENTATIVE OPINIONS.

THE NATIONAL INSURANCE BILL, introduced into the House of Commons on Thursday, May 4, by the Chancellor of the Exchequer, the Right Hon. D. Lloyd George, marks the beginning of a new era in national thought and serious endeavour. New principles are recognized, and fresh machinery is to be prepared for their embodiment in actual practice.

The BRITISH JOURNAL OF TUBERCULOSIS gladly welcomes this measure in so far as it proposes to further the prevention and arrest of tuberculosis, and alleviate the suffering, distress, and destitution which in so many cases is inseparable from the ravages of this fell disease.

Mr. Lloyd George, when introducing his Bill, put this aspect of the case so admirably, and with such insight and sympathy, that we make no apology for quoting his exact words, as reported in the *Times* of Friday, May 5, 1911 :

" We propose to do something to deal with the terrible scourge of consumption. There are, I believe, in this country about 400,000 or 500,000 persons suffering from tuberculous disease. From the friendly societies' point of view it is a very serious item because of the dragging length of the illness. In the Foresters Society the average illness of a consumptive patient lasts fifty-eight weeks, and out of the

total sick pay of that society about 25 per cent. is due to tuberculosis. There are 75,000 deaths a year in Great Britain and Ireland from tuberculosis, and a much more serious fact is that, if you take the ages between fourteen and fifty-five among males, you find that one out of three dies of tuberculosis, and these are the ages which should be those of strength, vigour, and service. It kills as many in this kingdom in a single year as all the zymotic diseases put together, and a very terrible fact in connection with it is that the moment a man is attacked and conquered by it he becomes a recruit of a destructive army, a mortal injury to those to whom he is most attached, and scattering infection and death in his own household. Seventy-five thousand deaths a year! There are forty-three counties and towns in Great Britain and Ireland with a population of 75,000. If one in a single year were devastated by plague, every man, woman, and child destroyed there, and the place left desolate—if the same thing happened in a second year, I do not think we should wait a single Session. All the resources of the country would be placed at the disposal of science to crush it out. I do not say that we can do it. Doctors think they can; they are confident they can; and the men who have devoted a great deal of attention to the subject are the most confident of all. Those engaged in experiments are full of bright hope that they can stamp it out, but they can only do it with help, and I propose to ask the House to help them.

"In Germany they have done great things in this respect. They have established a chain of sanatoria throughout the country, and the results are amazing in the number of cures that are effected. In this country we have practically only 2,000 beds in sanatoria which are devoted to tuberculous patients. We have only 4,000 beds in sanatoria altogether, and half of them are occupied by other patients. I really think it is about time that the State and the nation as a whole took the matter in hand, because the State is suffering. Our proposal is that we should first of all assist local charity and local authorities to build sanatoria throughout the country, and we propose to set aside £1,500,000 as a capital sum for that purpose. I am glad to think that in Wales we have already, through the munificence and zeal of the hon. member for Montgomery, raised a very considerable sum of money that has enabled us to build a succession of sanatoria throughout the country, and if the same thing were done in England, Scotland, and Ireland, I believe we should soon stamp out the most heartrending and painful disease that has ever afflicted the human race. We have to provide maintenance for that, and we propose to take a contribution of 1s. per annum per member for the whole of those who are insured compulsorily or voluntarily, and to that, in addition, the State will find 4d., so that there will be 1s. 4d. per

member for the purpose of raising a fund for the maintenance of these institutions. This is not an additional contribution. I have done with contributions. There are no more contributions levied on anybody for management or anything else. This is purely benefit. I propose that out of the fund 1s. shall be taken per annum for each member, and that the State shall add 4d. That will mean a fund of £1,000,000 a year to maintain these institutions, and I am assured by those who have most carefully considered the matter, including my right hon. friend the President of the Local Government Board and his very able staff, that that sum will enable us to do something to stamp out this terrible scourge."

It cannot be denied that there are many perplexities and difficulties connected with a systematic and comprehensive national scheme for the prevention and arrest of tuberculosis, and the recovery and amelioration of consumptives and other sufferers from tuberculosis. It may be admitted at once that there are uncertainties from the very incompleteness of our knowledge regarding the disease, and the lack of anything like complete information regarding the most effective and economic means whereby prevention and cure may be attained.

Mr. Lloyd George has clearly admitted that in any national attempt to cope with tuberculosis opportunities must be provided for further scientific research into the unexplored, or at all events the unrevealed, problems of tuberculosis.

The Chancellor has appealed for assistance in the fashioning of his measure into an effective force "which will relieve untold and undeserved misery in myriads of homes, which will help to prevent a good deal of wretchedness, and which will arm the nation to fight until it conquers 'the pestilence that walketh in darkness,' and 'the destruction that wasteth at noonday.'" We have not hesitated to avail ourselves of this suggestion, and have arranged, with the co-operation of a number of experts, representatives of many and varied points of view, to present a symposium which we believe will not only throw considerable light on the difficulties of the problem, but will at least serve in some measure to indicate ways and means whereby a satisfactory solution of the more important practical difficulties may be arrived at.

To all those who have participated in the presentation of this representative symposium we desire to express our best thanks.

FROM SIR THOMAS OLIVER,

M.A., D.SC., LL.D., M.D., F.R.C.P.,

Physician to the Royal Victoria Infirmary, Newcastle-upon-Tyne; Professor of Physiology in the University of Durham; Medical Expert to the Home Office; Editor of "Dangerous Trades," etc.

Provision of any means by the State or other authority whereby the development and spread of tuberculosis among the people may be checked cannot but have the support of the medical profession. Mr. Lloyd George's scheme deals largely with the treatment of the disease, and experience shows that, of all means for treating pulmonary tuberculosis, the open-air method has given the best results. Should the National Insurance Bill become law, notification of pulmonary consumption will become compulsory; more frequent opportunities will be given for the detection of the disease in its earlier stages; affected persons will be less disposed to continue at work, since provision will have been made for their own maintenance, and to some extent for their dependents; and by early segregation, especially in the case of large families in small houses, the spread of the disease ought to be considerably curtailed. It is generally admitted that the best results have been obtained when the treatment is applied in the early stages of the disease. To that part of the Bill which deals with the prevention and spread of the disease most of us can give our support, but it is of little use building sanatoria and spending large sums of money upon institutions for the treatment of tuberculosis so long as municipal bodies and County Councils pass plans for the building of houses for the working classes which are veritable hot-beds for the development and spread of the disease. Let us strike at the malady at its inception; for however opinions may differ as to the beneficial effects or otherwise of the sanatorium treatment of pulmonary tuberculosis, there can be no difference of opinion in regard to the provision of healthier and more capacious dwellings for the artisan classes. If public money is to be spent upon sanatoria, the good which may possibly be done by special dispensaries should not be altogether ignored. The provision of institutions for the reception and treatment of patients who are hopelessly ill from the malady should not be forgotten. As it is impossible to foresee what will be the effects of the proposed legislation upon the medical profession, it is to be hoped that, when the fuller views of the Chancellor of the Exchequer are made known, the medical profession may have some opportunity of expressing its opinion after more mature consideration.

FROM SIR WILLIAM J. THOMPSON,

B.A., M.D., F.R.C.P.I.,

Registrar-General for Ireland; Chairman, Census Commission, Ireland, 1911;
Physician-in-Ordinary to the Lord-Lieutenant of Ireland; Consulting
Physician to the National Hospital for Consumption.

The National Insurance Bill, as regards the clauses relating to the prevention and cure of sickness, is generally deserving of approval and support, but certain modifications are necessary which doubtless will be inserted.

The scheme for the provision and upkeep of sanatoria, as outlined in the Bill, will enable all persons who are insured in the manner provided by the Act to receive the benefits of sanatorium treatment when suffering from tuberculosis, if the local Health Committee considers the cases suitable for such treatment.

To grapple with this problem, the eradication of tuberculosis, two other institutions must go hand in hand with the sanatorium—namely: (1) the Dispensary, and (2) Homes for advanced cases. The dispensary acts, so to speak, as a central bureau; by its means cases fit for sanatorium treatment are found, those sharing the homes of consumptive patients are examined, and incipient cases, some of which may be suitable for home treatment, discovered; while advanced cases become known, and opportunity is afforded to segregate such in Homes. In addition, it is necessary that some system should be introduced for the subsequent care, for a certain time, of patients discharged from a sanatorium. There is no doubt that a great deal of the benefit of the treatment is lost by patients being obliged to return to their homes and resume their former work immediately.

The Women's National Health Association of Ireland, founded in 1907 by Her Excellency the Countess of Aberdeen, is working on lines somewhat similar to those indicated; and it is gratifying to observe that within the past three years the number of deaths in Ireland from all forms of tuberculosis has been reduced by about one-seventh (1,663), and that the rate of mortality per 1,000 living has fallen from 2.7 to 2.3.

It is to be hoped that the Government may extend the scheme under discussion so as to embrace already existing tuberculosis dispensaries, public sanatoria, homes for advanced cases, and the care of patients subsequent to their discharge from a sanatorium.

FROM WALDORF ASTOR,

M.P.,

Joint Treasurer, Special Appeal Committee of the National Association
for the Prevention of Consumption.

Mr. Lloyd George has realized what the National Association for Prevention of Consumption has been preaching for many years—that tuberculosis can be prevented, and that, quite apart from the humanitarian aspect, it is economically cheaper and to the advantage of the State to spend money in order to stamp out this disease rather than to continue losing the active services of the 75,000 persons who now die annually of tuberculosis and have to be supported during a protracted illness.

This was one of the first lessons learnt by the State Insurance Offices in Germany. They found that their funds were being drained away in providing paying pensions to numbers of men in the prime of life who had provided by their weekly payments but a fraction of the sums which they were drawing out. The result was a national campaign against tuberculosis on an unexampled scale.

The Chancellor of the Exchequer is lucky in finding people ready to welcome proposals rather than to oppose them as being unnecessary and extravagant. The Local Government Board, the Benenden Sanatorium, with its large membership connected with the Post Office employes and Friendly Societies, and the campaign carried on in the past by the National Association for Prevention of Consumption, have been especially valuable agencies in educating all classes and forming public opinion.

The Association has had a Tuberculosis Exhibition, which has always been largely visited wherever it has been sent, and has brought about, in many cases, immediate alteration in the attitude of *laissez faire* both of local authorities and public-spirited persons. It has distributed literature, sent lecturers, and given information and advice where required. Recently, the Special Appeal Committee of this Society, by its coloured posters, has prepared the taxpayers and electors to accept as being necessary and sound Mr. Lloyd George's proposal to spend what otherwise must have seemed an extravagant sum of money.

It is too early yet to estimate what will be the effect of the State taking part directly in the fight against tuberculosis: so much of the success of the Bill will depend upon the interpretation of the clauses, vague in many cases, and also upon the composition of the Central Advisory Committee and of the Local Health Committees.

FROM DAVID DAVIES,

M.P.,

Chairman of the Welsh National Association for the Prevention and
Abolition of Tuberculosis.

As described in the last number of this Journal, Wales decided that its memorial to King Edward should be a crusade against consumption. To this end nearly £200,000 has been subscribed, and a programme of education, diagnosis, treatment, and after-care, has been outlined. It is certain that the propaganda carried on in Wales impressed the Chancellor with the enormous economic waste due to tuberculosis, and led him to examine the position throughout the kingdom. The result is to be seen in the sanatorium sections of the Insurance Bill. The Welsh crusade has therefore succeeded in an unexpected manner. But, however flattered its promoters may feel, the first effect of the Bill has been to check the flow of subscriptions. People argue: "The State is going to see to this work; we shall pay through the rates and through approved societies: why should we also support a voluntary fund?" There is some force in this contention until it is realized that the State grants are to be made in some sort of proportion to local effort. The £200,000 raised by the people of Wales constitutes their claim to proportionate treatment by the State. They should not be penalized, but rewarded, for their spontaneous generosity.

The Memorial Committee are seeking to amend the Bill so as to secure that Wales may be treated as a unit for the purposes of sanatorium benefit. In this way it will be possible to retain the memorial and national character of the campaign. It is proposed to form an Association representative of the County Councils, the Friendly Societies, the medical profession, and the subscribers to the fund. This Association would be incorporated by charter, and become the instrument for the administration of the voluntary fund and the State grants. With a population of only two and a quarter millions, such a plan is feasible, and would make for economy in the provision of sanatoria and clinics and educational machinery. The University Colleges, the National Library, and the National Museum, afford abundant precedents for treating the Principality along the lines suggested.

FROM ARTHUR LATHAM,

M.A., M.D., F.R.C.P.,

Physician and Lecturer on Medicine, St. George's Hospital; Physician, Mount Vernon Hospital for Consumption; Advisory Physician, the Throat Hospital, Golden Square.

Those who for many years have worked in the hope of initiating a comprehensive campaign with regard to the prevention and treatment of consumption in this country have good reason to congratulate themselves. Public attention has been awakened; compulsory notification for a large part of the population has been instituted; and finally, and most important of all, the conscience of those in power has been stirred and the Chancellor of the Exchequer has introduced his Insurance Bill.

This Bill is at present in a fluid state, and it has yet to crystallize. It gives power for the provision of sanatoria, and already £1,500,000 has been set aside in the Budget for this purpose. Provision does not necessarily mean erection; and the word "sanatorium" includes practically any form of institution, whether already built or not, such as hospital, infirmary, convalescent home, dispensary, or home for the dying. In other words, accommodation for those suffering from tuberculous infection who require treatment will now be found, and the kind of accommodation required for the particular case, whether early, moderate, or advanced, will be forthcoming. It is the lack of such accommodation which has crushed our efforts in the past, and the fact that it is now provided will of itself encourage men to come for advice and treatment at a far earlier stage than they do at present.

The Local Health Committees—acting under the Insurance Commissioners—will be largely responsible for the provision of what may be termed hygienic education, machinery of detection, treatment, and after-care. They will at the same time co-operate with existing institutions, and serve the purpose of watch-dogs in seeing that the various statutory bodies act up to their powers.

In other words, the State will provide the money for the campaign, but the fight itself will be conducted chiefly by voluntary workers, if the Bill passes in its present shape. This seems to be as good a solution as is possible under existing conditions. Certainly the Bill, if adequately administered, should do much to diminish the incidence of tuberculous disease.

FROM MARCUS PATERSON,

M.B., B.S., M.R.C.S., L.R.C.P.,

Medical Superintendent, Brompton Hospital Sanatorium, Frimley.

Ten years ago it was pretty generally stated that, if enough so-called "open-air" sanatoria were built, tuberculosis would soon become a thing of the past! I do not think anyone conversant with the subject to-day would make any such statement. The one great alteration which must have taken place in the views of those who have made a special study of the matter with open minds is that fresh air alone is not doing all that was once expected from it. There is no doubt that fresh air alone will in some cases restore the resisting power of a patient, so that he recovers from tuberculosis, but there are also many other patients with whom, in addition to pure air, more specific methods must be adopted to raise their resistance to the disease. There are two such recognized modes of treatment—(1) Controlled auto-inoculation; (2) tuberculin treatment. The case for auto-inoculation I have put forward in my book on that subject,¹ and there is no room for it here. That tuberculin is of use must be a fact from the reports of physicians and of many sanatoria now using it. In any case, to get the best from the sanatoria, we must use other methods in conjunction with pure air.

"Open-air" sanatoria by many are said to be useless, and have not justified their existence. These criticisms are doubtless true, for the following reasons: (1) The fact that the curative effect of pure air and sufficient food alone has been relied upon, and no other effort made to raise the resistance of the patient; (2) that absolutely hopeless cases have been too often treated; (3) because there is a certain number of patients who from various causes, such as alcoholism, indifference, etc., will make no effort to try and get well—a cause of failure not due to the sanatorium itself; (4) because of the great difficulty in finding employment for patients after discharge. Most employers of labour refuse to have anything to do with anyone who has had tuberculosis, and so many patients relapse from semi-starvation through lack of wages.

Supposing, however—to put it at an absurdly low estimate—a sanatorium restored to permanent working capacity only 20 per cent. of the patients, and the rest were failures, would one for this reason say a sanatorium was useless, and allow this 20 per cent. to die without doing all that is humanly possible for them? I do not think this is the policy of this country. We provide treatment for practically all other infectious diseases for two reasons—to prevent spread of infection, and, if possible, to cure the patients. Tuberculosis should be included in this provision.

¹ Paterson, M. S.: "Auto-Inoculation in Pulmonary Tuberculosis."

Finally, in a campaign against tuberculosis the sanatorium is not the only point of attack. This disease is largely preventable, and therefore every endeavour should be made to prevent it, rather than to treat the sufferers after they have become infected. The old adage that "Prevention is better than cure" is particularly applicable to tuberculosis. A sanatorium run on proper methods is a very necessary link in the chain of prevention and cure, and, as such, I am confident it will remain a necessary institution. Such a sanatorium may not be a specific against tuberculosis, but up to the present, in my opinion, no better method exists, and until something superior is substituted we must use the best available.

FROM G. F. McCLEARY,

M.D., D.P.H.,

Medical Officer of Health for the Metropolitan Borough of Hampstead;
Author of "Infantile Mortality."

The provisions of Mr. Lloyd George's Insurance scheme that relate to the "sanatorium benefit" form the beginnings of a great national campaign against tuberculosis. For the first time the central Government has come forward with a proposal to provide funds to help local effort, and it behoves the workers in the anti-tuberculosis movement to see to it that the money is laid out to the best advantage; for though the sums to be provided are large, they are none too large for the work that needs to be done. It will be noted that the "sanatorium benefit" includes treatment not only in "sanatoria," but also in "other institutions"; and the latter term should be defined to include the anti-tuberculosis dispensary, which, in the opinion of many workers, is a more effective as well as a more economical preventive agency than the sanatorium.

The administration of the "sanatorium benefit" as proposed by the Bill is open to serious criticism. It is difficult to see why this extremely important preventive work should be entrusted to a brand-new local authority—the Local Health Committee—rather than to the existing Public Health authorities, who have already done so much for the prevention of tuberculosis. Sanatorium accommodation is now being provided by many of our municipalities, and anti-tuberculosis dispensaries are gradually springing up all over the country. What is wanted is the development of existing agencies and authorities, not the creation of new official machinery, which is bound to lead to duplication of work, overlapping, and waste of effort. It is to be hoped that the Bill will be so amended in Committee as to entrust the administration of the "sanatorium benefit" to the councils of the counties and the county boroughs, and in London to the metropolitan borough councils.

FROM DUNCAN FORBES,

M.D., B.SC., D.P.H.,

Medical Officer of Health for the County Borough of Brighton; late Medical Officer of Health for Cambridge.

It is generally recognized that the fall in the death-rate from tuberculosis is due to the better housing and the better feeding of the working classes. Better housing and better feeding lead to the cure of many incipient cases, and give immunity to many others.

Sanatorium treatment teaches the importance of fresh air, and this indirectly leads to better housing; the patient on return home probably keeps his bedroom window open. As curative agencies, sanatoria have been failures except when dealing with the earliest cases. So seldom are the cases diagnosed early that most sanatoria, although doing excellent work from the humanitarian point of view, waste most of their money, from the public health point of view, in patching up chronic cases which are incurable.

The objects which the Government should keep in view are—
 (1) To get persons who start with a cough to consult a doctor at once;
 (2) to feed and house well every family any member of which is consumptive. Every worker notified to the Medical Officer of Health who is found not to be advanced beyond the first¹ stage of consumption should have, whilst resting at the doctor's orders, his average wage guaranteed him for a year, or a sum sufficient to provide 3s. per week for food for each adult member of the family, whichever is the greater; in addition the rent should be paid, and if, in the opinion of the Medical Officer of Health the housing is insufficient, a larger house should be provided. Similarly, special allowances should be made to the worker who reports any member of his family in the early stage of consumption. In this way early diagnosis would become common instead of rare, because the worker would be encouraged to report himself. The present scheme gives no encouragement to the incipient case to report himself. No man at present "goes on his club" until he is really unfit for work and until the disease is incurable; similarly, under the present scheme no one will apply until it is too late.

The advantages of sanatoria are small compared with those likely to accrue from early diagnosis and the provision of rest, sufficient food, and good housing. Money for sanatoria should, therefore, only be provided after the other conditions have been satisfied.

Particulars as to the stage of the disease and as to the home

It should be widely taught that consumption is only curable in its very early stages and that, consequently, everyone with a cough should consult a doctor early.

conditions should be furnished to the Health Committees by the Medical Officers of Health of the various districts. Further reports as to the progress of the disease, the habits and conduct of the patient, and the cleanliness of the home, should be furnished at intervals.

FROM JANE WALKER,

M.D.,

Medical Superintendent, East Anglian and Maltings Farm Sanatoria.

The greatest praise is due to the Chancellor of the Exchequer and to those who have assisted in drafting this Bill in that all existing systems of help are used to the full. By using Friendly Societies and their organizations, help is given to those already helping themselves.

The £1,500,000 set aside for sanatoria is, or should be, for the provision of sanatorium treatment, and not for the erection of sanatorium buildings. Seeing that this disease is so steadily decreasing there seems little reason for putting up buildings of a costly and permanent character. In this connection, it would be well to alter the Local Government Board's rules, "that no money may be lent for other than permanent structures"; hence no loan can be obtained for buildings made of wood. The provision for Local Health Committees is excellent, but it must be wide and really representative, and, in my opinion, at least one-third of its members should be women. The committees ought to have a certain proportion of both men and women medical practitioners on them. I note with satisfaction that arrangements are to be made whereby no insured woman shall be visited otherwise than by a woman. Where a medical visit is to be paid, it follows that the patient must be visited by a woman doctor.

The Sanatorium Scheme is not only a sick benefit scheme, but one which will lessen premature invalidity. This is really a movement in preventive medicine, for, by removing sufferers and restoring their economic efficiency, it prevents others from being attacked. Ample provision must be made for wives and children while the insured breadwinner is under treatment. Men and women should be made equal as regards sanatorium benefit. This would probably be actuarially sound, because fewer women than men contract the disease. Provision must be made for adequate treatment of advanced cases.

FROM C. H. GARLAND,

Chairman of the National Association for the Establishment and Maintenance of Sanatoria for Workers suffering from Tuberculosis.

I hail Mr. Lloyd George's proposals with reference to the crusade against consumption with unfeigned delight. I look upon them as a signal triumph for the policy which I have taken part in advocating

for many years. In opening the debate on "The Working Man in Relation to Tuberculosis" at the Edinburgh Conference in July, 1910, I pointed out that the work of our Association among Friendly Societies had convinced us of several things, chief among which were the following : (1) Voluntary agencies have entirely failed to produce the machinery necessary to rid the working classes of the disease of consumption, and are incapable of the measures necessary to that end. (2) Poor Law administration is not only inadequate for the purpose, but entirely obnoxious to the wage-earner, and is not invoked until too late for cure. Its chief and great advantage has been in the isolation of advanced and infectious cases. (3) Existing insurance agencies are not likely to tackle the question in an effective manner. For Insurance Companies the financial interest is not large enough, and Friendly Societies do not care to use their machinery. (4) Voluntary insurance would not be sufficiently universal to make it cheap and effective within a reasonable time. There remained the possibility of State intervention. It was to such intervention that I looked for a final and effective solution of the problem, not only of working-class consumption, but of tuberculosis in general in Great Britain and Ireland. For such an intervention and its consequent taxation, I believed the working classes to be largely prepared and willing to bear their proportion.

At the conclusion of the discussion on my paper, a resolution was passed urging that "the special attention of the Chancellor of the Exchequer and the Government and Parliament be called to the great importance of giving the prevention and treatment of consumption a prominent place in the proposed scheme of Invalidity Insurance."

I hardly expected so soon to see such an excellent and complete concession as that which has been made by Mr. Lloyd George. I look upon State intervention as being absolutely necessary, and therefore the proposal that the State should spend one million and a half in capital, and one million a year, in the fight against consumption, raises in my mind no other feelings than those of approval and pleasure.

FROM C. S. LOCH,

B.A., D.C.L., LL.D.,

Late Professor of Economic Science and Statistics, King's College, London ;
Secretary to the Council of the London Charity Organization Society ;
Author of "Charity and Social Life."

The provisions which are proposed in the National Insurance Bill in regard to sanatoria may be tested by the following question : How do we now face the difficulties of tuberculosis successfully ? The answer is : By the ascertainment and treatment of "contact" cases

in connection with dispensaries ; a well-designed and purpose-like use of sanatoria ; a reference of hopeless cases to proper institutional care ; insistence on methods of recovery that keep alive as far as possible the energy of the patient ; suitable provision for the needs of the home during the breadwinner's absence ; proper sanitary interference, to prevent nests of tuberculosis remaining infectious centres.

Will the Bill help this ? The reply is here : The Bill provides for sanatoria and other institutions. It seems to lay stress on sanatoria only. If so, it is misleading. The whole treatment of these cases is the issue. This may be undertaken under the system of quasi-insurance adopted in the Bill, if in other ways that system is proved to be efficient. Therefore, it is possible that it may provide successfully for the whole treatment that is necessary. Whether it does or does not is a pure speculation. There is a need for more accommodation in sanatoria, and for the time a great need for *Asiles* for the irremediable cases. This latter especially the State or local authority might well supply. There is most need for proper local dispensary and "contact" case work. This has been shown to be well and successfully done on voluntary lines. The Bill as it stands bids fair to kill off voluntary effort. In some ways the scheme of the Bill is itself a new difficulty in the path of reform. A much less ambitious scheme would be much more effective.

ORIGINAL ARTICLES.

THE RELATION BETWEEN INCOME AND
TUBERCULOSIS.

BY WOODS HUTCHINSON,

A.M., M.D.,

Clinical Professor of Medicine, New York Polyclinic; Late Lecturer in Comparative Pathology, London Medical Graduates College and University of Buffalo;
Author of "Preventable Diseases," "Studies in Human and Comparative Pathology," "Instinct and Health," etc.

CONSUMPTION is the most certain of the numerous blessings of the poor. That it is, and always has been, closely connected with poverty is so painfully obvious that to formally call attention to the fact is about on a parallel with Mr. George Bernard Shaw's recent announcement that, after profound and careful investigation, he had discovered that the real trouble with the poor was—poverty.

It is tuberculosis that keeps the lives of the poor like their annals—short and simple. But when one attempts to establish the precise relationship between these two conditions the difficulties begin. It is, of course, and has been for half a century, a commonplace of vital statistics that the death-rate from tuberculosis varies precisely with the social position of the individual, falling most lightly upon the highest and wealthiest classes and most heavily upon the lowest and poorest.

Consumption and Civilization.

In this sense consumption is the price of civilization, and, as usual, paid by the lower two-thirds for the benefit of the upper third. A typical statement is that of Korosi—that of the inhabitants of Budapesth there die of consumption of each 10,000 well-to-do persons 40; of the moderately well-to-do, 62.7; 77.7 poor, and 97 per cent. paupers. There is a sound biologic basis for our modern determination to acquire wealth, since those who obtain it reduce their chances of dying from tuberculosis 50 per cent. Furthermore, there can be little question that the marked and encouraging decrease in the mortality from tuberculosis, which began about sixty years ago, long before the discovery of the tuberculosis bacillus, and which progressed as rapidly before that time as it has done since, was both the accompaniment to and the result of the superb industrial and scientific developments of the Victorian era, based upon the utilization of steam, electricity, and

other forces of nature. That this lowering of the death-rate was largely due to the immense improvement in wages, food-supply, housing, and sanitation of the great masses of the community—the working classes. To-day, those nations which have the highest rate of wages and the shortest hours have the lowest death-rate from tuberculosis.

It is, however, of course obvious that a number of different factors enter into this relationship. First of all is the self-evident fact that, the larger the income of the individual, the better he is able to supply himself with the necessities and surround himself with the comforts of life, including good food, better house accommodation in less densely populated and more healthful districts, better sanitary surroundings, more bath-tubs, and lessened exposure to infection, better and earlier medical attention, etc.

Again, it must be remembered that, when you have classified individuals, and even classes, according to their earning capacity and income, you have roughly arranged them in the order of their mental and physical vigour. That an unconscious physical selection is continuously going on, both between different industrial classes and between the individuals engaged in each class or occupation, by which the stronger and more enduring secure the best positions and the highest incomes, leaving their weaker and less fortunate fellows to fill the lower ranks. So that, to a certain extent, the more restricted and unfavourable surroundings, dependent upon smaller incomes, fall upon a class which was already less vigorous and less resisting.

Thirdly, inasmuch as consumption runs a course of years, and in some of its more chronic forms even of decades, its existence tends to lower the physical vigour and earning capacity of its victims, so as to incapacitate them from earning the higher rate of wages and competing in the more highly paid and strenuous occupations. Frequent periods of sick-leave might cause them to lose their positions in well-paid employment with regular hours, and compel them to drop to some poorly paid and less constant positions, or even to change their occupations entirely for others which have lighter work but much poorer pay.

But, frankly, it seems to me that all those explanations practically bring us back to one basal conclusion—that is, that the heaviest factor in the production of the most unfavourable element in the prospect of recovery from tuberculosis is lack of income in the sense of power to provide the necessities of life and of health. If by some means the victim of consumption in any industrial rank of life could be given an increase of, say, 10 per cent. in his wages, it would do more to improve his chances of recovery than almost any other single remedy. If the rate of wages for a given occupation can by some legitimate

means be increased, the percentage of tuberculosis will be diminished almost in the same ratio. In short, to borrow again from the profound philosophy of Mr. Bernard Shaw, "The cure for poverty is money."

Fortunately, the experience of our open-air sanatoria furnishes us with an elaborate experiment bearing upon this question, whose findings are unmistakable and practically unanimous. This is, that patients taken from every possible rank in life show almost the same percentage rate of recovery when placed under favourable conditions. The difference comes in when the question is reached of sending them back to their previous occupations and social surroundings after they have been cured.

Economic Considerations.

From a practical point of view there can be no doubt that the question of income is a most pertinent and painfully important one. Almost the first question that the physician has to ask, after making a diagnosis of tuberculosis, is: "What are your circumstances?" "For how long can you afford to go away? or, if you cannot go away, what extra food, what shorter hours of work or confinement, are you able to give yourself?" Upon the answer to this question depends the probable result. The consumptive can, roughly speaking, buy as many chances of living as he is able to afford.

The findings of our splendid system of tuberculosis dispensaries in New York, under the Committee of the Charity Organization Society, are profoundly instructive in this regard. Of those of their patients who are able to go away, either to sanatoria or to the country for six months or more, some 70 per cent. recovered in the sense of securing an arrest of the disease. Of those who were only able to go away for a few weeks, or could shorten their hours somewhat and improve their food and surroundings, about 50 per cent. recovered. Of those who were unable to go away at all, and could not shorten their hours of labour or improve materially their food or surroundings, except by opening windows and getting milk and eggs from diet kitchens, 30 per cent. recovered.

The second point in clinical experience, where the question of income comes vividly home to us, is after the consumptive has been cured, when the problem arises—how he is to earn bread to support the life that he has saved. Unless he be possessed of unusual ability or skill, or be fortunate enough to have saved money, or to have relatives or members of his family upon whom he can live, it is exceedingly difficult—I had almost said impossible—for the wage-earning "graduate" to earn a living under modern industrial conditions without relapsing and losing his life in the process. This is one of the most pathetic and hopeless phases of our experience with the scourge of consumption.

The Rôle of Occupation.

The light that is thrown upon this problem by the death-rate from consumption in different occupations and classes is interesting, but somewhat confusing. In the first place, the data are exceedingly defective in several ways. First, because many occupations and professions run the whole gamut of wages and incomes from low to high, from miserably underpaid to well paid, within the limits of their own division. And we have no means of determining as yet whether the mortality assigned to the occupation comes chiefly from the lower or from the higher. Secondly, because most of the records at present available from census reports, industrial insurance companies, etc., give only the deaths actually occurring among the workers themselves, without any information as to the mortality among their wives and children, who have to live upon their wages, in the surroundings made possible by them. Thirdly, because in many of these the requisite data are not given for calculating the influence of age on the part of the workers, as different occupations, of course, vary widely in the percentage of workers of different ages, and the death-rate from consumption is profoundly affected by the age-relations of the individuals subjected to it.

Income and Tuberculosis.

Nevertheless, there are certain general results and groupings which in the main appear to support the importance of income as a factor in tuberculosis.

First of all, the findings, both from the United States Census, the reports of the English Registrar-General, and the data collected by the industrial insurance companies brought together, and admirably discussed and presented by Mr. Frederick I. Hoffmann, support the same general conclusions in regard to the relations between tuberculosis and social position that have already been discussed. If the different classes be arranged in order of their death-rate from tuberculosis with those having the highest mortality at the top, and a line be drawn marking the average mortality for the entire series, every non-wage-earning class and occupation in the community, such as the professions, merchants, business men, etc., will be found below that line. On the other hand, every class of day-labourer (with the exception of farm labourers), as distinguished from those paid by the month or week, will be found above it. Secondly, with the exception of certain notoriously unhealthy occupations which mechanically irritate the lungs, like marble and stone cutters, compositors and printers, etc., the five classes and groups having the highest death-rate from tuberculosis are those which are among the most poorly paid and have the least control over their surroundings; headed by servants, and followed

by labourers (other than agricultural), book-keepers, clerks, etc., cigar makers and tobacco workers, cabinet workers and upholsterers, barbers and hairdressers. At the other end of the scale we find as having the lowest death-rates of all, with the exception of farm labourers and farmers, five decidedly well-paid occupation-groups—viz., bankers and steam railroad employés, clergymen and policemen. The fact that bankers have the lowest death-rate from tuberculosis of all occupations is surely most suggestive of the influence of money. In fine, whatever may be our attitude in regard to the precise relations between wages and tuberculosis, we are justified in promoting every honourable movement for the raising of wages as a factor of great importance in our success. Especially is this the case in the prevention of the disease at what we are now coming to regard as its very fountain-head—viz., in children. The mere increase in the income of the head of the family, which would be sufficient to furnish each child with an additional cup of milk, an extra egg, or a double thickness of butter upon its thinly-spread bread, might turn the scale in deciding whether that child would succumb to the invasion of the tubercle bacillus or throw it off. The results obtained in our tuberculosis dispensaries merely by adding a quart of milk and two or three eggs daily to the diet abundantly prove this.

Of course we shall be told at once by political economists and hard-headed men of affairs, and property-holders generally, that to raise wages is both impractical and immoral as interfering with the sacred law of supply and demand. But there is another equally sacred and inescapable law, and that is the inevitable connection between sickness, poverty, and underfeeding as causes, and pauperism, dependency, and crime as results. It is infinitely more economical, to say nothing of humane, for the community to expend its money in raising wages and increasing food supply, than in supporting poor relief systems, hospitals, and prisons.

So eminent and conservative a body of experts as the Commission on Poor Law Reform of the English Government states, among the conclusions in its recent monumental report, that it is safe to conclude that sickness and ill-health are the fundamental cause of *at least 50 per cent.* of all pauperism and dependency. Our New York Charity Organization Society in a careful study of some five hundred families found that *over 30 per cent.* of all these families, thrown upon the support of the community, had been made dependent directly or indirectly by tuberculosis.

Incidentally, it may be remarked, that only 2 per cent. of this dependency was found to be due to drink, and the same figure is recorded in the investigations made the same year as to the cause of lack of employment. That smug and comforting belief which the

successful strata of society are accustomed to apply, as a salve to their consciences, that the poor would spend any increase of wages in drink and extravagance is about as baseless as its sister belief: "Poverty is a blessing." In fact, they were probably both invented for the same purpose. The briefest comparison of the homes, tables, and clothing of the working classes to-day with those of fifty years ago shows overwhelmingly that at least three-fourths of their increase in wages has gone to improve their food, their houses, and their general health and comfort; while drunkenness, brawling, gambling, and dissipation of all sorts have diminished in the same proportion. It is simply a question of where and when the community will spend its money—beforehand, in preventing disease, dependency, and crime; or "behindhand," in a desperate endeavour to cure and punish them.

TUBERCULOSIS WORK IN CHICAGO.

BY W. A. EVANS,

M.D.,

Commissioner in the Department of Health of the City of Chicago.

THE Chicago death-rate from consumption is growing less. Formerly many deaths from consumption were hidden in the returns. Registration of living cases has added to the deaths from consumption by decreasing the number of hidden cases. Chronic bronchitis as a cause of death has been practically eliminated. Such cases are now recorded as consumption. In spite of these additions, the consumption death-rate is decreasing.

But there are items which augur better even than this. Our people are very well informed about consumption. They are aroused on the subject of fresh air. They are becoming "fresh-air fiends." They are sleeping on porches or they want ventilated rooms. They sniff at close, currentless rooms. Many of them shun places where mixed crowds assemble in close places. They are interested in controlling consumption; therefore our death-rate should continue to decrease, and the plans for the next four years should be better, more far-reaching, and should receive greater support than the plans for the last four.

Points in the Anti-Tuberculosis Crusade.

A campaign against tuberculosis is divisible into: (a) Control of cases of developed tuberculosis; (b) control of factors making for

tuberculosis, other than developed cases; (c) educational work against tuberculosis; (d) general health-education work.

The largest factor in the spread of consumption is the person having the disease; therefore, a proper regard for values demands that he be given first consideration.

A very important factor in the control of consumptives is the registration of living cases. The number of consumptives registered at the Chicago Department of Health in 1906 was 242; the number registered in 1910 was 6,182. Three registers are kept: (a) Every case of consumption is registered against the house from which it was reported; this register has been kept for nearly four years. From it studies are made—as, for instance, that of Sachs, a map showing tuberculosis in the Ghetto; it was also used in making the map “Consumption on Four Miles of Chicago Streets,” shown at the Sixth International Congress on Tuberculosis. (b) An alphabetical index of consumptives is kept. (c) A monthly spot-map of consumption is made.

The death-certificates are very carefully scrutinized in the Department of Health, and cases held to be tuberculosis are checked back against the registers of living cases. In this way we find some foci of consumption. All registration is done in the Department of Health.

Cases of late tuberculosis are frequently highly contagious. The County government has provided a hospital of four hundred beds for the care of such cases. The Home for Incurables has a hospital of seventy beds for this use.

The Department of Health has the power to remove dangerously contagious cases to the hospital. This it occasionally does. But the good accomplished is minimized by the inability of the hospital to detain forcibly such cases through its lack of police power. Late cases are visited in their homes by medical health officers from the Department of Health, by nurses from the dispensary department of the Municipal Sanatorium, and, in some cases, by nurses from the Visiting Nurse Association.

Care of Early Tuberculous Cases.

For the early cases there is the following provision: There is a State law which allows a city to tax itself for the care of consumptives in sanatoria. Chicago, by a referendum vote, has decided to make such provision. Its enactment provides for a yearly income, which shall be determined by the trustees and the City Council, but which shall not exceed 1,000,000 dollars. The present yearly levy provides about 400,000 dollars a year. The proceeds of the first levy are now available; 160 acres of ground, just inside the city limits, have been secured, the first draft of the buildings has been submitted, and the

building should begin during the coming summer. The Municipal Tuberculosis Sanatorium is now conducting eight dispensaries distributed throughout the city. An important part of the work of these is home visitation by nurses. Nurses from the dispensaries visit the homes where consumptives have just died. The Health Department disinfests such homes, but the house is the least important part of the focus. The nurse goes there to instruct the relatives in right living, and, what is more important, to get each member of the family to have a physical examination or a tuberculin test, or both.

Co-ordination and Co-operation.

If help is needed in the home of a consumptive, it is given by the United Charities, the County Agent, or the Visiting Nurse Association. In addition, consumptives are cared for at Edward Sanatorium, Naperville, Illinois; Winfield Sanatorium, Winfield, Illinois; Fresh Air Hospital, Chicago, Illinois; Lake County Sanatorium, Waukegan, Illinois; Ottawa Tent Colony, Ottawa, Illinois (near-by towns); and in various general hospitals in the city. Many cases go to remoter sanatoria and climate resorts.

Spitters are apprehended by the police and fined. This law is about 1 per cent. enforced. Public sentiment is more effective than the law.

This control is far from being what it should be. It should be developed in the following way:

Twice each year each medical health officer should be furnished a list of consumptives in his district. He should be assigned a nurse. For the purpose of this inspection there should be a temporary massing of the Tuberculosis Dispensary nurses, the Child Welfare nurses, and, the School nurses. This would give us an average of something more than one nurse for each of the one hundred medical health officers' districts. This would give an average of about one hundred cases to each combination of one doctor and one nurse. The report should show the location of the patient and the danger to the contacts. Some instructions, verbal and printed, should be given. Such a survey should be completed in three days. These reports should be checked, and cases which had shifted location and, therefore, had been missed, should be subsequently reassigned for visiting.

Once a year a list of insanitary and border-line tuberculous habitations should be made, and these should be assigned to the sanitary inspectors for systematic visitation.

Cases of tuberculosis which are found to be grossly careless should be hospitalized. Until law is had for this, the children should be removed by the Juvenile Protective Association operating through the

Juvenile Court. Systematic examination of the contacts, adults and children, should be made.

The following provision for rewards should be made: A card should be given to those who are careful; it should set forth that the party named is careful, and therefore safe; the card should be good for one year; it should be issued to those whom the inspectors and nurses find worthy of it. This method of control, operated for ten years, should reduce the number of cases to a point where the resources of the State would allow every open case to be hospitalized.

Tuberculosis in Domesticated Animals.

Hand in hand with, and a part of, the same programme, there should be a policy of control of every host of the tubercle bacillus in the animal kingdom.

This control of animals which are spreading tuberculosis is next in importance. Our ordinances require that all milk should come from tuberculin-tested cows, or else that it should be properly pasteurized. Between 20,000 and 30,000 of the cows supplying milk to Chicago are tuberculin-tested and proven to be tuberculosis free. About 80 per cent. of the milk is pasteurized; about two-thirds of this is properly done; about one-third of it is being improperly done. The ordinances provide the same requirements for butter, cheese, and ice-cream as for milk. An effort is being made, therefore, to prevent the spread of tuberculosis through milk, and, incidentally, to control a group of hosts of tubercle bacilli—to wit, milch cows.

Tuberculosis is being controlled in our Zoo animals—another group of tubercle bacillus hosts. This is being done by the Lincoln Park Board and the head-keeper, Cy De Vry.

Hygienic Measures.

Under the head, "Control of Factors which make for Tuberculosis," etc., almost anything might be written. The following items bear directly enough on the subject to be worthy of mention:

For three years the city has been studying the subject of general air-pollution. The city has a very energetic smoke commission, with a chief inspector and corps of assistants. The ordinances now provide that no boiler-plant shall be installed without having the plans approved by the Smoke Department. This Department and the Health Department have made studies of air-pollution. Jointly they worked with the Local Transportation Committee on the preparation of a report on the electrification of railway terminals as a solution of a part of the smoke problem.

The Ventilating Engineers, the Board of Education, and the

Health Department joined in the formation of a Ventilation Commission to study the question of inside air. One of their reports is to be found in "Open-Air Crusaders." Another is to be made to the American Medical Association at its forthcoming meeting.

Inspection of living and working places is made by the sanitary bureau of the Department of Health. They have been especially active in controlling underground occupation for living and working. Underground bakeries and kitchens have come in for a large part of their attention.

The new Building Code contains detailed ventilation provisions much in advance of those of any other American city. The City Council refused this year to appropriate for a ventilating engineer and ventilation inspectors; nevertheless, we have one ventilating chemist and one inspector. All plans for new buildings must be passed upon by the Department of Health. Public sentiment is at work. Through these different agencies enforcement is coming about with gratifying rapidity. Through the absence of the direction of disinterested city engineers and inspectors, builders, owners, and managers are wasting much money on ill-advised installations.

We have much the best car-ventilation ordinances now in existence. They have been in force since January 31, 1910. At the present time nine-tenths of the elevated cars and one-half of the surface cars are conforming to them. The railways are beginning to investigate the matter of ventilation.

The temperature of schoolrooms has been officially reduced from 72° to 68° F. The schoolrooms are "blown out" by opening the windows several times a day. The school authorities, co-operating with the Ventilation Commission, are experimenting on methods of getting more air-movement in the schoolrooms, a better air distribution, a lower temperature, and an increased humidity.

The Elizabeth McCormick fund has given two open-air schools—one on the roof of a day nursery, and the other on the roof of a public bath. The pioneer Graham cold-room school has been followed by eight others falling into two groups—one with a temperature at 50°, where the children's clothing is somewhat supplemented and a little food is given, and one with a temperature of 60°, where no clothing is furnished and no food is given either by the Board of Education or by philanthropy.

Housing and Tuberculosis.

Very little is being done for housing. The sanitary bureau, in addition to inspecting on complaint, has a small corps which is making a systematic housing survey. They cure the conditions found in the worst places. With us, lodging-houses for unmarried males are of

first importance in the spread of disease. The State Lodging-House Inspector nominally controls these.

Two housing studies have been made in Chicago—one by the City Homes Association, the other by the School of Civics and Philanthropy. No experiment has been made by anyone in building sanitary homes for people of moderate means. Our people of this class live in two or three room frame cottages. One, frequently two, and occasionally three of these are located on a lot 25 feet by 140 feet. Most of these cottages are in bad repair. Generally, the present owners are holding on to this property hoping that business or manufacturing will reach it. Any movement to rebuild for residence purposes at this time would probably result in the building of four- to six-story tenements covering as much of the ground, and with as small courts as the law would allow. Our ordinance just passed provides for courts, and that not more than 75 to 90 per cent. of the ground shall be covered, depending on the height of the building. The Department of Health has not encouraged agitation for new homes for the man of small means, since we believe that in a few years a way will be found to build four-room quarters which can rent for eight to ten dollars a month, and return 5 per cent. on the investment after providing for depreciation. This is the next step forward which we advise.

During 1910, the Municipal Lodging-House gave a bed, with a night-shirt, a bath, fumigation of clothes, a cup of coffee and some bread, and maintained a free registration and employment agency for an average bed-day cost of eleven cents. During 1908 they fed several hundred people daily, giving them 3,100 calories, at a cost of four and four-tenths cents per man per day for food. We are, therefore, certain that a lodging-house could be run for ten to fifteen cents a bed, or twenty-five cents a day, including board, and give for the first sum protection against the contagion of consumption, pneumonia, colds, and vermin, fresh air properly warmed, a bath, and an opportunity to laundry the clothes; and for the second sum all of the above items and food enough to maintain the body. These lodging-houses should be inaugurated by the employers of unskilled labour. This is the second step forward which we advise.

Two years ago the State passed an improved factory-inspection law. In it are fair provisions for ventilation. Factory inspection is done by the State factory inspectors and the city sanitary inspectors. Primarily, this inspection was directed against causes of accidents and injuries. They are now taking up the causes of disease.

Some of the labour unions—particularly the bakers, printers, cigar-makers, and metal polishers—are interesting themselves in shop conditions. The bakers particularly have been active in opposing bad sanitary conditions in basement bakeries. In 1907 there were 744

above-ground and 581 under-ground bakeries in Chicago; in 1910 there were 1,093 above ground and 294 under ground.

Inspection of meat against tuberculosis is effectively done by the Federal, State, and city meat-inspectors. Inspection against tubercular milk is done by the city milk-inspectors.

Tuberculosis and Public Opinion.

The foundation of all governmental activity is public opinion. The Chicago agencies for public education and stimulating public opinion are many.

The Health Department maintains a lyceum bureau. It furnishes lectures to those who ask for them. Many of these lectures are on consumption. An average of seven hundred lectures are given each year. But, left to themselves, the people who need these lectures most would not ask for them. Therefore, the bureau keeps a list of neighbourhood clubs, labour unions, improvement clubs, ward clubs, nationality societies, church clubs, etc. From time to time letters are sent out offering lectures. These letters are sent where lectures are most needed. Some of the lectures are illustrated by lantern slides, some by charts, diagrams, and spot-maps; some are not illustrated. A favourite subject is "The Health of this Neighbourhood, illustrated by Charts, Diagrams, and Spot-Maps." Another favourite is, "What's Hurting your Trade," similarly illustrated. Lantern slides, maps, charts, and diagrams are loaned to outside lecturers. There is a fair collection of cuts and etchings, which are loaned to papers and periodicals.

Moving pictures are made use of as follows: A representative of the Department spends his time in going from one theatre to another; he carries a line of health-films; he gets permission to show one film in lieu of one of the regular numbers. In this way we reach an audience that is naturally indifferent. If it was an advertised health programme they would not come. If there were several health numbers they would leave. Occasionally an entire evening will be given to a health programme—moving pictures, lantern slides, and a twenty-minute lecture. Some use has been made of talking machines.

The *Bulletin* issues every Saturday. It goes to 7,000 people. It is filled with health talks, epigrams, and statistics. Advance sheets go to the large dailies for their Sunday story.

A press service goes to about 250 papers every Thursday. These papers are published by societies, unions, neighbourhood clubs, improvement clubs, and nationality societies. More than half of them are published in languages other than English. Among them are such titles as "Ventilation," "Printers and Consumption," "Basement

Air," "Care of Schoolrooms," "Cash Value of Ventilation," "Indoor Humidity," "Importance of Correct Breathing," "What is Consumption?" "Sunlight."

On Monday a factory bulletin is sent out. It is planned for the bulletin boards of large employers of labour.

The State Board of Health gets out a seventy-page booklet on consumption, intended for physicians, nurses, and those others interested and intelligent enough to read a book of this character.

Anti-spitting Crusader cards are gotten out and widely distributed by the Anti-Spitting League. The street car anti-spitting cards are furnished by the street car companies. The consumption street car cards are furnished by the Department of Health, and placed without charge by the Street Car Advertising Company. Bill-board posters are furnished by the Civic Federation, the cartoonists, and the Bill-Board Posters' Union. The Tuberculosis Institute furnishes lectures, lecturers, slides, statistics, and help in every way for the movement. It has been largely their function to inaugurate activities, the feasibility and necessity for which, having been demonstrated, are taken over by other agencies.

And, finally, nearly every organization in town—religious, commercial, insurance, fraternal, labour, pleasure—organizations with most diverse purposes, have health committees, and in some way or other ally themselves with the health campaign. Some of them pay a good deal of attention to consumption. Those which are especially interesting themselves in other phases of health are indirectly contributing towards the consumption campaign in two ways: First, stronger bodies and better working and living conditions will decrease the danger of infection with consumption; second, a better health conscience must precede the sacrifice needed to rid society of consumption.

OPEN-AIR SCHOOL WORK IN CHICAGO.

By SHERMAN C. KINGSLEY,

General Superintendent of the United Charities of the City of Chicago; Editor of "Open-Air Crusaders."

OPEN-AIR¹ school work in Chicago began in the summer of 1909, when the Chicago² Tuberculosis Institute, in co-operation with the Board of Education, gave thirty children, all of them incipient cases of tuberculosis or predisposed to the disease, one month's schooling in the open air. The equipment was simple—a large shelter-tent and thirty steamer-chairs, provided by the Tuberculosis Institute; the basement dining-room, toilets and shower-baths of the Harvard School; and the needed teachers put at the disposal of the children by the Board of Education. Children were admitted only after medical



THE OPEN-AIR SCHOOL.

examination, and nurse and physician watched them carefully during the entire month. The day's routine was very similar to that of like schools in England and Germany.

The summary of results, as prepared by Frank E. Wing, Superintendent of the Tuberculosis Institute, states that of the thirty children, seventeen were first-stage cases of tuberculosis, two had tuberculous glands, and eleven were pronounced pretuberculous. Sixteen had

been and ten still were directly exposed to tuberculosis in their homes, while in the case of the other fourteen there was no evidence of direct exposure. Two-thirds of them showed a temperature ranging from 99° to 100.2° on admission. On discharge, only two showed a temperature above 99° , while the rest were practically normal. The total gain in weight for the thirty children was 113 pounds, the range being from 1 to 7 pounds. In the opinion of the teachers and other observers, this brief régime of right living brought the pupils up to the normal standard in alertness and ability to sit up and take instruction and to keep up sustained interest in their school work. In the minds of many people this seemed all very well as a



OPEN WINDOWS AT THE HAMLINE SCHOOL, CHICAGO.

warm-weather enterprise, but they felt that it would necessarily be put aside with summer clothing at the approach of cold weather. To convince these doubters and to profit by progress already made, it seemed very desirable that the experiment should be conducted in Chicago, as it had been elsewhere in the United States, during the winter.

The problem of securing a site for winter work was much more difficult. The Mary Crane Nursery, conducted by the United Charities of Chicago, was finally chosen. It is a four-story brick structure with a roof 40 by 70 feet, constructed with the possibility of being used as a playground. On this roof is an open-air tent

14 by 24 feet, made of asbestos board, and used in the summer for the open-air treatment of sick babies. The roof is also provided with a toilet and a store-room, and the other equipment of the building, consisting of shower-bath and dispensary on the first floor, dining-room and kitchen on the third floor, and elevator service, was placed freely at the disposal of the pupils.

The school is financed through a grant to the United Charities by the Elizabeth McCormick Memorial Fund, a foundation in honour of a child, who, although she lived but twelve years, displayed a most unusual personality and exceptional traits of character. Her interest in and sympathy for the unfortunate, her thought and



SCHOOLING IN THE OPEN.

activities in their behalf, would have done credit to persons of maturity. The trustees of this fund are wisely encouraging and making possible movements that promise far-reaching social significance.

That the open-air school is such a movement seems to be universally admitted in medical and educational circles. Perhaps the heaviest burden laid upon the United Charities of Chicago by any single cause is that which results from tuberculosis. Every day brings to the attention of the social worker men, women, and children who might be saved if they could have a chance. This is equally true in every large city where tuberculosis clinics reveal the

terrible ravages of the great white plague. Careful investigations carried on at one tuberculosis clinic in Chicago disclosed the fact that of 655 children of tuberculous parents who were examined from September 1, 1909, to September 1, 1910, 108 showed positive infection, and 274 were predisposed. There was no place in the city where these children could receive free care and schooling.

To meet their needs, the Elizabeth McCormick Open-Air School was opened in October, 1909.¹ The following were the principal diagnostic points used in selecting applicants: (1) Family history (63 per cent. of the children came from families in which some



CHILDREN OF THE OPEN-AIR SCHOOL AT DINNER.

member had died from or was in an advanced stage of tuberculosis); (2) general type of body and state of nutrition; (3) presence or not of fever; (4) existence of cough; (5) dulness or changes in breath-sounds (râles were usually found to indicate open tuberculosis); (6) reaction to Von Pirquet's test; (7) absence of tubercle bacilli in sputum or swab from throat. No open tuberculosis case was admitted.

It had been planned to limit the number of pupils to twenty-five, but the pressure for admission was so great that thirty-five was

¹ "Open-Air Crusaders: A Report of the Elizabeth McCormick Open-Air School, together with a general account of Open-Air School Work in Chicago, and a Chapter on School Ventilation." Edited by Sherman C. Kingsley. Pp. 107, with illustrations. Chicago: United Charities of Chicago, 51, La Salle Street, Chicago, Ill.

nearer the average attendance. Four girls too old for school work were given light work about the building, and shared in the specially-prepared meals and rest periods of the school-children.

The picturesque Eskimo suits worn by the pupils helped to create team spirit, and of course protected the children from the cold. They were cut from a pyjama pattern, large size, so that they could be slipped on over the ordinary clothing. The material chosen was a heavy woollen blanket which cost about \$3.50. Both boys and girls wore, tucked into lumberman's boots, the loose-fitting trousers which combined warmth with the utmost freedom of movement. The sleeping bags were made of canvas lined with rather heavy



REST TIME.

cotton blankets. Thick gloves, extra blankets, and soapstones for use on extremely cold days completed the outfit. For the teacher a fur-lined coat and a fur cap were provided. Evergreen trees about the enclosure introduced a genuine bit of forest on the city roof.

The tent which was used for the schoolroom and fitted out with desks and blackboards was a permanent structure of asbestos board, with windows opening out canopy-fashion on every side in such a way that they could be dropped on the side from which a storm might come. Outside of this enclosed tent was a large shelter-tent which was simply a canvas top without sides, to protect from rain or extreme heat. Here the children took their daily naps, tied up snugly

in their warm sleeping-bags and stretched out full-length on canvas cots. We found that the canvas cots permitted more complete relaxation than was possible in the steamer-chairs which are used in many open-air schools.

Every child was given a cold shower-bath every morning. The bath usually lasted about ten seconds, after which the child was given a brisk rub with a Turkish towel. As a usual thing, the children object to these baths at first, but in a very few days learn to like them, and, strange as it may seem, object to going without them. At the beginning of last year a general order was issued that in case it was found that a child did not react properly after a cold bath, the baths



THE MEDICAL EXAMINATION.

for this child were to be discontinued. There was not a single child, however, of the entire forty-nine, for whom it was necessary to discontinue the baths.

The results from the medical standpoint were most encouraging. The forty-nine children had an aggregate 609 pounds below normal weight. They made an aggregate gain of 178 pounds. The greatest individual gain was 14 pounds in seventeen weeks. All showed a decided lowering of temperature.

From an educational standpoint, the results were equally satisfactory. Counting out the girls too old for school work and the children who moved away or for one reason or another dropped out

before June, there were about thirty pupils in regular attendance from January to June. Although the school hours were cut in half and no home studying was permitted, three children made two grades, one made three, and twenty-three made one. Pupils who had been considered incorrigible and stupid in the common school became tractable and bright in the open-air régime.

The fresh-air movement in Chicago and in the United States has received a great impetus from the stories of these pupils. Partly as a result of the school, open-window rooms and low-temperature rooms have been added to several school buildings in the city, and the order has been issued by the Superintendent of Schools that all the windows in every building be opened three times a day.

A second Elizabeth McCormick School has just been opened under the same auspices as the first. A two-story municipal bath-building, through the good offices of the health department, has been placed at the disposal of the cause. All this work has had the generous and hearty support of the School Board and Chicago's conspicuously able Superintendent of Schools, Mrs. Ella Flagg Young.

The expense outside of teacher and ordinary school equipment for the first school the first year was \$3,273. This included all cost of first equipment, and is from \$700 to \$1,000 more than it will cost this, the second year. What the school accomplished for the children who attended it richly repaid for all the money and effort put forth in their behalf. More significant still is the part these little crusaders have had in helping to discover health-needs and to win health and fresh-air rights for all children.

"THE TUBERCULOUS SCHOOL-CHILD": WITH SPECIAL REFERENCE TO OPEN-AIR SCHOOLS.

By D. M. TAYLOR,

M.A., M.D., D.P.H.,

School Medical Officer for the County Borough of Halifax.

TUBERCULOSIS in children of school age affords a problem of great interest and of special difficulty. This applies more particularly to pulmonary tuberculosis (including the many forms of thoracic tuberculosis), where all the classical symptoms of the adult seldom present themselves, and the detection of the disease does not come within the range of the technique of our physical diagnosis or bacteriological survey. In children, the earliest stage is generally pre-pulmonary. Many practitioners will not admit tuberculosis in the absence of definite physical signs. "The cry of abundant phthisis in our schools has no foundation in facts."¹ Others are obsessed with the omnipresence of its ravages. V. Pirquet and Calmette have not settled the question, although, by showing a prevalence greater than mere physical diagnosis can demonstrate, they draw attention to the urgent importance of recognizing the so-called "pre-tuberculous" stage, which is at present out of the range of our actual methods of exact diagnosis. To wait for definite signs is fatal, and one must often take energetic action on presumptive evidence. An error of diagnosis is here a blessing, and its only result will be to have restored a weakly child to a state of physical vigour. Further, as our aim in attacking any infectious or contagious disease should be preventive rather than curative, it seems more rational to concentrate on early tuberculosis than on the stricken adult. The first duty in all tuberculosis work is the care of the children. The opinion is daily gaining ground that adult phthisis is largely due to the rousing of imperfectly healed or protected child attacks, and our personal experience leads to the conclusion that a child with definite signs of pulmonary tuberculosis, if efficiently cared for and completely restored to health, is resistant and less likely to fall a victim to adult phthisis. There is a close analogy, moreover, between a successful vaccination and a sufficient early dose of tuberculosis with full re-establishment of normal health.

We are dealing with the school-child, but all the remarks apply with equal force to infancy and early childhood. Tuberculosis in this

¹ Dr. Kerr's Annual Report to the London County Council, 1909.

latter period has received little care or thought in our legislative schemes—a strange anomaly when we reflect that 30 per cent. of those cases for which education authorities are busy providing special physically defective schools are due to the deforming and damaging effects of tuberculosis in the pre-school period. School medical inspection can never be regarded as truly preventive medicine until we can make this work, with its clinics and home-visiting, include the one to five years age period. How to link up this early childhood with the present machinery is one of the most urgent problems of the present day.

Prevalence and Incidence.

These were discussed at the Edinburgh Conference last year, and statistics for Great Britain are authoritatively given in Sir George



Photo by]

NATURE-STUDY.

[J. Perrin.

Newman's annual reports. The figure of prevalence depends largely on the individual standpoint of the inspector, and ranges from 0 to 16 per cent.

Our experience from school medical inspection is that—(1) 1 per cent. of elementary school children (including absentees) show definite physical signs of pulmonary tuberculosis; (2) 3 per cent. are definitely predisposed—the pre-tuberculous.

This total 4 per cent. of school-children, the subjects of manifest or latent tuberculosis or predisposition thereto, needs special methods of handling.

That the estimate falls far short of the real prevalence of tuberculosis, and that all states of anæmia, impaired nutrition, delicacy, etc., are either manifestations or the immediate precursors of its presence, can easily be conceded. Dr. Hamburger¹ states that 94 per cent. of poor children in Vienna show signs of tubercle by the time they reach fourteen years. Thomesco² of Bucharest found 63 per cent. of school-children react definitely to Calmette's ophthalmic test. The late Professor Granchet, as the result of a special inquiry, maintained that 15 per cent. of Paris school-children show a definite predisposition to tubercular disease. Naegeli of Zurich found, post



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HALIFAX OPEN-AIR SCHOOL
(The Edwin James Oates Memorial.)

mortem, tuberculous foci in 33 per cent. of children aged five to fourteen years.

The actual death-rate from all forms of tuberculosis is, however, lowest for the school age. The difficulty of arriving at a correct figure for school-children is enhanced by the fact that a large percentage of absentees from school—not included in the ordinary statistics—are the victims of tuberculosis in all its forms. Hay³ found 6.7 per cent. of absentees with definite signs of the pulmonary form.

¹ Hamburger: "Frequency of Tuberculosis in Childhood," *Lancet*, vol. ii., 1910.

² Thomesco: "Ophthalmic-réaction dans le Ecoles primaires," Third Congress School Hygiene.

³ Hay: "The School and its Part in the Prevention of Tuberculosis," *Lancet*, vol. i., p. 1328, 1908.

Diagnosis and Symptoms.

There is no test equally applicable to all cases, nor is there any one symptom pathognomonic of early tuberculosis. The refinements of physical diagnosis—temperature charts, elective areas of dulness, gland palpation, percussion, auscultation, eye and skin reactions, opsonic indices, tuberculin tests, X rays, bacteriological research—have furnished no final criterion either for the definite case or for the pre-tuberculous. The clinical picture is individual for each physician, either as an intuition or a *tout ensemble* and grouping of various signs. The old-fashioned practitioner, with his “facies,” “diathesis,” and common sense, was in early tuberculosis often less liable to err than the modern physician, armed to the teeth with every conceivable instrument, brand of serum, and bacteriological equipment.

A careful consideration of both laboratory and clinical data will furnish the best diagnosis.

In pre-tuberculous cases, family history (not from any hereditary point of view) and home conditions are the most important factors. All children in contact, under working-class home conditions, with adult phthisis, or of tuberculous stock, should be treated as suspects, and for such we are using our open-air school as a sorting-house or observation centre.

Generally, one seeks out the delicate, the poorly nourished (without economic cause), the child losing or not gaining weight, and those with toxic symptoms, as anæmia, languor, restlessness, or febricula. Locally, the history of persistent cough; the presence of a network of distended veins on chest walls, especially under the clavicles; imperfect chest expansion, general or localized; impaired resonance; altered or enfeebled breath-sounds, taking care to distinguish the occasional physiological weak R.M. at the right apex; expectoration, with or without the presence of the tubercle bacillus—these may lead to a definite diagnosis, and by their relative degree to an estimate of the extent of chest involvement. In nearly two hundred tuberculous school-children we have only found the bacillus in one case.

The various diagnostic uses of tuberculin are not applicable in the general routine of school medical inspection.

Differential Diagnosis.

This in the pre-tuberculous can best be effected by admission to the open-air school, careful observation there, and noting the effects of short residence under open-air conditions, rest, super-alimentation, and diminished mental efforts.

Simple *versus* tuberculous adenopathy is always a difficult problem,

and the presence of tuberculous thoracic glands is more often suspected than diagnosed.

It is not an uncommon experience for us to find cases presenting classical signs of phthisis—*e.g.*, dull area, prolonged expiration, and various moist sounds—due to some degree of collapse, which entirely clear up on removal of nose or throat obstruction, such as enlarged tonsils and hypertrophied mucous tissue, or the correction of faulty position.

Chronic bronchitis is occasionally found in school-children, and may have no tuberculous element.

Ætiology.

The immediate exciting cause is the entry of the *Bacillus tuberculosis* into the organism. The bacillus is practically ubiquitous—*i.e.*, in milk, food, air, etc.—and its extermination far from being possible. One can, however, reduce the dosage—an all-important factor in causation—and to effect this, strict supervision and isolation of open adult cases, with careful disinfection after death, are the best measures. Dust and dirt in home and school are dangerous, while the purity of the milk-supply demands increasing attention.

The most frequent source of infection in children is, according to Dr. Emmett Holt, from direct association with persons suffering from pulmonary tuberculosis. The teacher and caretaker, as sources of infection, must not be overlooked, and their health from this point of view needs careful inquiry. We have already referred to the importance of treating all contacts as pre-tuberculous, and our special home inquiries into all suspicious cases found during medical inspection seem to confirm the view that family history and infected homes are serious factors. Last year extended inquiry was made into the home and social conditions of thirty-four cases (sixteen boys, eighteen girls) of suspected or actual pulmonary tuberculosis found during medical inspection of elementary school-children. Of these, twenty were pre-tuberculous, or suspected latent cases; seven showed definite signs of a slight degree—*e.g.*, impaired movement or resonance or altered shape in chest-walls; six showed a further stage of these signs, with altered breath-sounds; and one case was open, with the bacillus present in abundance. In twenty of the cases a near relative—father, mother, sister, or brother—had died, or was ill, with phthisis; in six, uncles or aunts had died from the disease; and in two, grandparents; while in six cases only no history of phthisis was obtained. The social circumstances (wages, etc.) were poor in thirteen, fair (*i.e.*, bare living wage) in fifteen, and good in six. The home conditions (light, ventilation, damp, sanitation, overcrowding) were bad in twenty-three, fair in eight, good in three cases only. In eleven cases the child slept

either with a brother or a sister. In one case we found a brother suffering from discharging tuberculous glands, with no surgical dressing, nursing a baby twelve months old. Such figures seem to impress the all-importance of contact with pre-existing cases as the exciting cause, and the means of spread of tuberculosis in children.

The path of infection is still much debated. The pharyngeal, respiratory, and digestive tracts must be safeguarded both for bovine and human infection. The predisposing causes which prepare the organism for the reception and development of the bacillus are now receiving much attention. Infantile and juvenile diseases—*e.g.*, rickets, measles, whooping-cough—which damage the mucous membranes, especially when leaving these unhealed and for some time in a sub-acute catarrhal condition, are in many instances direct antecedents of the onset of tuberculosis. Again, enlarged tonsils and adenoids predispose not only by their mechanical hindrance to full, free movement of the lungs, but also, when they become septic, by affording a channel for entry of bacillus, and involvement of rich glandular systems which drain mouth, nose, and pharynx. The part played by carious teeth, since the investigations of Dr. Halle (Berlin), is being more and more recognized.

Prophylaxis and Treatment.

Measles, whooping-cough, and the other exanthemata should be followed up until complete convalescence and sound mucous membranes are re-established. The importance of a pure food-supply, especially tubercle-free milk; the sanitary conditions of the homes as to light, ventilation, refuse removal, overcrowding, etc.; the isolation of the phthisical adult, and the disinfection of infected homes, are the main lines of attack. Many insist on the value of educative measures amongst parents, teachers, and school-children. The removal of tonsils, adenoids, etc., and the care of carious teeth, are important prophylactic measures. In school: light, ventilation, cleansing, repair of defective floors, removal of dust, a certain amount of scientific disinfection. Respiratory gymnastics or breathing exercises are often too perfunctorily rushed through; physical exercises (Swedish drill), with massive movements of chest and body, will correct malpositions and give increased chest measurements. Suspect children should be periodically weighed and charted.

Much more could be done by graduated lessons on personal and home hygiene. The pernicious effect of tight clothing and the careless habit of mouth-breathing must be always before the teacher's mind.

Exclusion from school is seldom necessary, and for poor children, with reasonable precautions, the school is the best place. Outside

school, home visiting by nurses and visitors, who can advise the parents and explain the simple principles of hygiene. The school clinic should act as a tuberculosis dispensary in combination with the adult agencies in the town. The school medical officer should be informed of every case of adult phthisis where children reside in the home.

Open-air classes are a valuable adjunct to good school hygiene. Feeding of school-children has done much from a preventive point of view, but cannot be relied upon to arrest disease. Holiday homes should be established in connection with each Authority. Halifax



Photo by]

[J. Perrin.

A CLASS IN THE OPEN.

(private enterprise) has this summer taken a house in the country, where many weakly children will sojourn for a few weeks.

Open-Air Schools.

These are partly preventive and partly curative. The Halifax Open-Air School—the first provincial school of this type in England—held its third session from April 25 to October 14, 1910. Fifty-one boys and 73 girls passed through the school, staying from three months (24 cases) to six months (94 cases). Thirty-one children had attended during a previous session.

The principles of the open-air school are: (1) Abundant fresh air—large mansion with extensive grounds for open-air classes; (2) plentiful supply of good food—three good meals a day; (3) one spray bath weekly; (4) practical methods of instruction—most

lessons evolving naturally from daily routine ; (5) individual care by small classes ; (6) comradeship.

The general physical results were good, as are indicated by the following numbers :

Average increase of height, 1.1 inches. Greatest increase, 2.6 inches.

Average increase of weight, 3 pounds 3 ounces. Greatest increase, 8 pounds 2 ounces.

Average increase of hæmoglobin, 10 per cent. Greatest increase, 22 per cent.

Teeth, ears, eyes, and skin conditions received treatment during stay. Anæmia, malnutrition, rickets, functional nerve and heart troubles, enlarged glands, convalescents after operation, and early or suspected tuberculosis were the chief conditions of selection. Among the 124 children who attended there were 25 cases of tuberculosis.

Results.

| | | |
|---|-------|--------------------------------|
| 4 tuberculous glands | - - - | 2 quite cured ; 2 much better. |
| 11 cases of early phthisis with definite physical signs | | { In 7, signs all cleared. |
| | | { In 4, signs less marked. |
| 10 cases of suspected phthisis with bad personal or family history (<i>i.e.</i> , the so-called "pre-tuberculous") | | { In 5, much improved. |
| | | { In 3, improved. |
| | | { In 1, fairly well. |
| | | { In 1, withdrawn. |

While the results generally are satisfactory, and lasting in the large majority of cases, medical officers of open-air schools are conscious of the limitations of the system and of its drawbacks. The return to the home, with its infected or insanitary environment, often undoes the work of the day, and at the close of the session children insufficiently cured are returned to the ordinary school. The subsequent records are sometimes disappointing and the relapses disheartening.

The open-air school—the purely non-residential type—is therefore incomplete as at present worked in this country. It requires extension in two directions : (1) There should be continuous operation of the school during the year, summer and winter ; (2) provision should be made for sleeping and taking entire charge of a certain number of these school-children.

The writer recently visited the principal open-air schools of France and Germany, of both residential and external types. In France, the Charlottenburg type is not in favour on account of its limitations, and at Vésinet and Vernay the scholars are in residence. The French ideal seems to be an extension of their Holiday Colony Scheme, so as to provide a sufficiently long stay and to continue

without interruption the education of the scholars. Vernay is a true school sanatorium for early tuberculous and predisposed children.

In Germany, the large industrial centres continue to establish open-air schools of the external type, but the need for residential care of certain cases is also being realized. At Elberfeld, such residence is now provided in an excellent dormitory built amongst the pine-trees for twenty-four of the most suitable open-air children.

The present want of residential treatment for ailing school-children is being more and more realized, and a movement in this direction is sure to spread in the near future.

We make no reference to sanatoria for children which have a distinct purpose and are apart from the treatment of school-children by an Education Authority.

Tuberculosis work amongst children is, however, only one phase of the problem, and will not be effective unless the Health Authorities at the same time make a vigorous campaign on home conditions, secure isolation of open cases, and the destruction of the tuberculous seed.

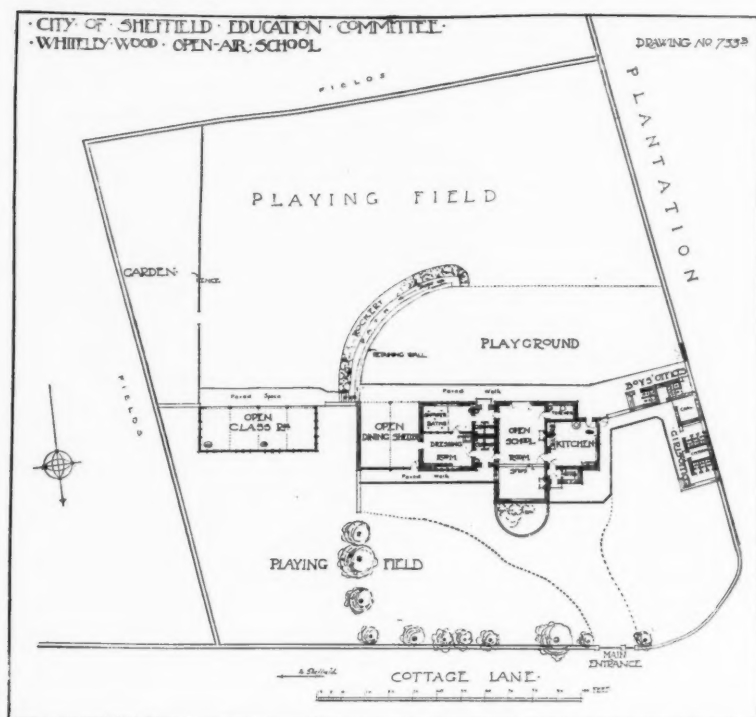
THE SHEFFIELD OPEN-AIR SCHOOL.

By RALPH P. WILLIAMS,

M.D., B.S., D.P.H.,

Professor of Public Health in the University of Sheffield, Chief School Medical Officer and Deputy Medical Officer of Health to the City of Sheffield.

THE following concise report of our experience in connection with the open-air management of school-children will probably be of service and suggestion to other students of tuberculosis and workers for child welfare.

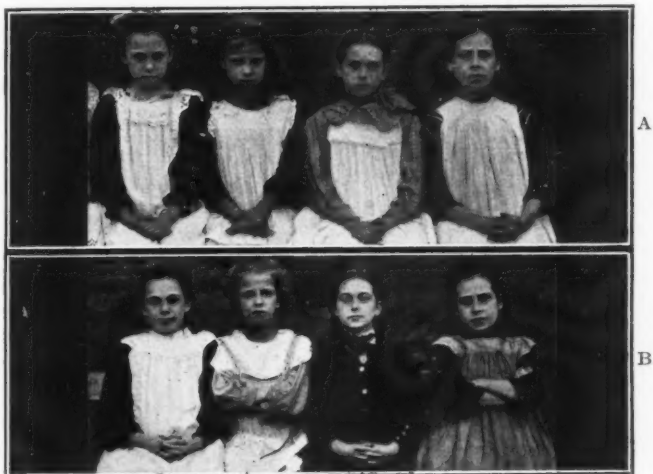


PLAN OF THE SHEFFIELD OPEN-AIR SCHOOL AND GROUNDS.

The Open-Air Recovery School at Whiteley Wood was re-opened for the admission of delicate children on May 30, 1910. Owing, however, to the structural alterations which were in progress at that time, only one-half of the total number of children (100) allowed by

the Board of Education were admitted, the remaining fifty being admitted on July 11, when the alterations were completed.

The school was ordinarily visited twice weekly by one of the school nurses, although a considerable number of extra visits were paid when detailed medical examinations were in progress, especially during the opening and closing weeks. The cleansing scheme was thoroughly carried out, and home visits paid, advice being given to the parents when necessary.



CHILDREN ATTENDING THE SHEFFIELD OPEN-AIR SCHOOL.

A, On admission; B, on discharge.

Condition of Children on Admission.

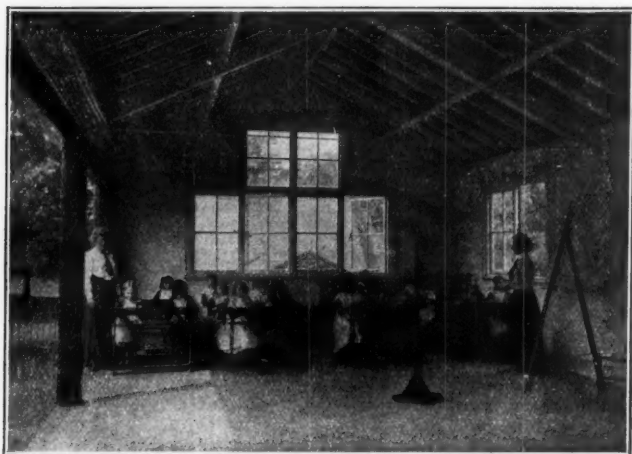
The following tables indicate the physical condition of the children on admission, together with the number in which defects occurred. The children have been divided into two groups—those admitted on May 30 and those admitted on July 11 (all remained until the end of October):

CHILDREN ADMITTED MAY 30, 1910.

| | | | | | |
|---|-----|-----|-----|-----|----|
| Anæmia and malnutrition | ... | ... | ... | ... | 32 |
| Oral sepsis | ... | ... | ... | ... | 3 |
| Bronchitis | ... | ... | ... | ... | 6 |
| Tuberculosis of lung | ... | ... | ... | ... | 10 |
| Tuberculosis of glands of neck | ... | ... | ... | ... | 3 |
| Lateral curvature | ... | ... | ... | ... | 7 |
| Blepharitis | ... | ... | ... | ... | 1 |
| Convalescent after pneumonia | ... | ... | ... | ... | 1 |
| Convalescent after removal of enlarged tonsils and adenoids | ... | ... | ... | ... | 2 |
| Convalescent after operation for empyema... | ... | ... | ... | ... | 1 |

CHILDREN ADMITTED JULY 11, 1910.

| | | | | | |
|--|-----|-----|-----|-----|----|
| Anæmia and malnutrition | ... | ... | ... | ... | 30 |
| Oral sepsis | ... | ... | ... | ... | 14 |
| Bronchitis | ... | ... | ... | ... | 11 |
| Tuberculosis of lung | ... | ... | ... | ... | 6 |
| Tuberculosis of elbow-joint | ... | ... | ... | ... | 1 |
| Enlarged mediastinal glands (? tuberculosis) | ... | ... | ... | ... | 9 |
| Lateral curvature | ... | ... | ... | ... | 5 |
| Blepharitis | ... | ... | ... | ... | 4 |
| Heart disease | ... | ... | ... | ... | 1 |
| St. Vitus' dance | ... | ... | ... | ... | 1 |
| Epilepsy | ... | ... | ... | ... | 1 |
| Minor epilepsy | ... | ... | ... | ... | 1 |
| Convalescent after operation for adenoids | ... | ... | ... | ... | 1 |



THE OPEN-AIR CLASSROOM.

Treatment of Teeth.

Mr. Frank Harrison, M.R.C.S., L.D.S., Senior Dental Surgeon to the Sheffield Royal Hospital, again kindly arranged to examine all the children admitted, and to treat a very considerable number of them. From the figures quoted below it will be noted that this year a number of teeth were stopped, in addition to the extractions :

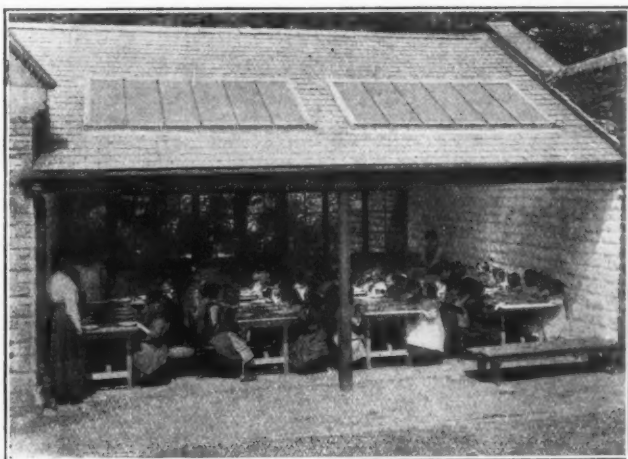
| | | | | |
|-----------------------------|-----|-----|-----|-----|
| Number of children examined | ... | ... | ... | 101 |
| Anæsthetic cases | ... | ... | ... | 15 |
| Number of extractions | ... | ... | ... | 90 |
| Number of teeth filled | ... | ... | ... | 28 |

I consider that the dental treatment is of the utmost value, for a child cannot benefit from the good food provided if unable to

masticate properly owing to tender teeth, or if poisoned by the continual discharge which is poured from carious teeth.

Feeding.

All meals were served in the open-air shed, irrespective of weather. In the case of seventy-nine children the parents contributed towards the cost of the food in sums varying from 2s. 6d. to 6d. per week. The parents of the remaining thirty-seven were excused payment by the Committee after careful investigation, which proved that they were not in a financial position to contribute. Among the thirty-seven



DINING SHED ADAPTED FROM TWO PLAY SHEDS.

children who were not paid for, one was a scholar who died, one was withdrawn before the amount of contribution was fixed, and one left the city.

The caretaker was assisted in the kitchen by her sister, who was a capable cook, and also by a kitchenmaid, who began her work when the additional fifty children arrived in July. The girls and boys, in the course of their housewifery work, also rendered some assistance in peeling potatoes, cleaning knives, drying plates, etc. The menu is drawn up so as to include foods which are cheap and yet contain the maximum amount of nourishment. Although no dainties were given to the children, the food was thoroughly appreciated. Several requests were received from mothers for information as to the preparation of porridge and other foods served at school.

Educational Work.

Educational work was continued on the same lines as last year, prominence being given to personal hygiene and Nature-study. In connection with the latter, some very successful rambles were taken in the country by the children, accompanied by the teachers, ample opportunities for the teaching of this subject being found in the immediate vicinity of the school.

With reference to personal hygiene, each child was provided with the following articles, which were numbered: Washable bag, con-



REST TIME.

taining brush and comb, tooth-brush, hand-towel, bath-towel; other numbered articles being a deck-chair and foot-rest, blanket, and rain-cape. The cleansing of the teeth was carried out daily. Special attention was given this year to physical exercises, and the good results which have been obtained in regard to increased chest capacity are no doubt largely due to the thorough way in which these exercises were taught.

The Regulation of Rest.

During the two hours' rest which took place in the open air the deck-chairs were used. To each was attached a foot-rest, which added considerably to the comfort of the children. In bad weather the new shed was used, together with the central hall of the school, with the new doors open. In addition to the deck-chairs, a dozen canvas beds

THE SHEFFIELD OPEN-AIR SCHOOL 209

were provided for those children suffering from lateral curvature. These were simple and inexpensive, costing 6s. 6d. each, and are much to be preferred to deck-chairs when any special weakness is present.

Expense and Results.

In all, 116 children passed through the School, it being found necessary to exclude certain children for various reasons, including epilepsy, whooping-cough, etc. The cost is indicated as follows :

WORKING EXPENSES (MAINTENANCE) FOR YEAR ENDED OCTOBER 31, 1910.

| | | | | | | |
|------------------------------|-----|-----|-----|------------|----|---|
| Salaries of Teachers | ... | ... | ... | £168 | 5 | 6 |
| Provisions | ... | ... | ... | 195 | 1 | 0 |
| Conveyance of Children | ... | ... | ... | 108 | 4 | 2 |
| School Equipment | ... | ... | ... | 90 | 7 | 2 |
| Fuel, Light, Cleaning, Rates | ... | ... | ... | 58 | 10 | 1 |
| Doctor and Nurses | ... | ... | ... | 23 | 8 | 0 |
| | | | | <hr/> | | |
| | | | | £643 15 11 | | |

Less Government Grant, £146 15s. od.
Parents' Contributions, £48 3s. od.

The following are the results as estimated by the examination of the children at the end of October :

| | | | | | | |
|-------------------|-----|-----|-----|-----|-----|----|
| Cured | ... | ... | ... | ... | ... | 44 |
| Improved | ... | ... | ... | ... | ... | 51 |
| In same condition | ... | ... | ... | ... | ... | 3 |

Reliance in this estimation is based on a careful physical examination of the child, especially with regard to its weight, chest measurement, condition of heart and lungs, glands, etc.

The results obtained in the School were quite as satisfactory as those obtained last year, although the type of child was slightly different. A larger proportion of children suffering from definite diseases was admitted, whilst last year nearly all were suffering from anæmia and malnutrition only. It is quite impossible to represent by means of statistics the value of the School, but in my opinion there is no doubt whatever that the treatment of children in the early stages of tuberculosis, and, more important still, in the so-called pre-tuberculous stage (that is, in the condition of lowered vitality, which is well represented in the anæmia and malnutrition class), is of the utmost value when carried out on the lines of the Open-Air School.

It is far cheaper and easier to cure a child who is suffering from lowered vitality due to insufficient and improper food, insufficient

sleep, and the general stress of slum life, than to do so by sanatorium treatment when it is actually infected with the tubercle bacillus.

As to the permanency of the results, it may be stated that of 39 children attending the School during 1909 who were examined six months after leaving, 24 have gained weight, 14 have lost weight, and

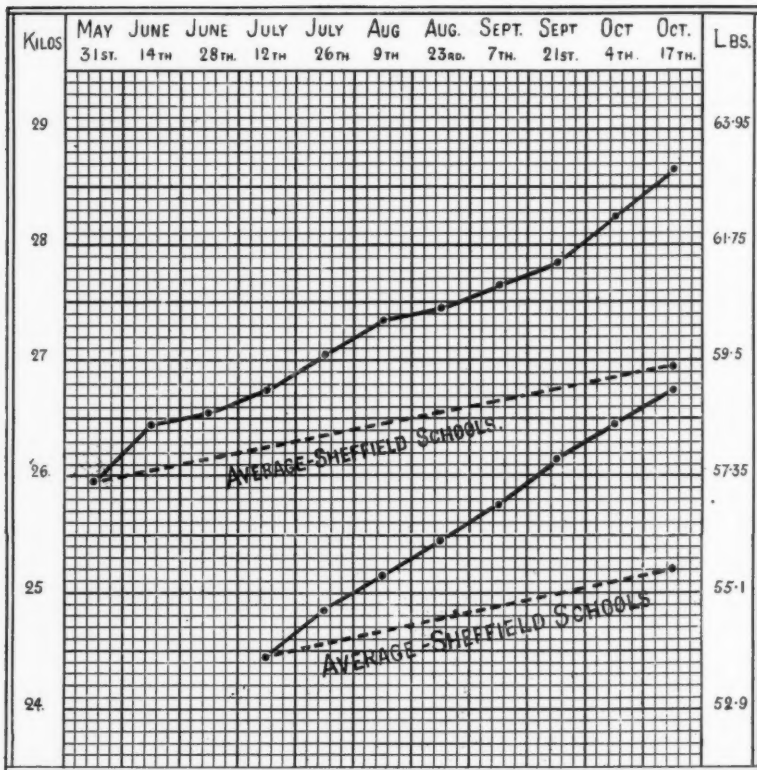


CHART SHOWING THE AVERAGE WEIGHTS, ON THE DATES MENTIONED, OF THE CHILDREN WHO ATTENDED THROUGHOUT THE PERIODS FROM MAY 30 AND FROM JULY 11.

I remained stationary, a very satisfactory result considering the very poor home circumstances of many of the children.

The increase in weight which is shown on the accompanying chart is similar to that obtained last year, and excellent results with regard to the behaviour of the children were also obtained.

As regards increase of weight, the children were weighed every fortnight during their stay at the School. The chart shows the regular

THE SHEFFIELD OPEN-AIR SCHOOL 211

gain in weight which took place in the two sets of children admitted. The following is the average gain in weight of the children :

| | | | |
|------------------------|-----|-----|------------------------|
| Boys admitted May 30 | ... | ... | 2.5 kilos (5.5 lbs.). |
| Girls admitted May 30 | ... | ... | 2.76 kilos (6.1 lbs.). |
| Boys admitted July 11 | ... | ... | 2.27 kilos (5.0 lbs.). |
| Girls admitted July 11 | ... | ... | 2.32 kilos (5.1 lbs.). |

The highest gain was 5.2 kilos. (11.4 lbs.).

An increase of chest measurements was noted in all the children, this beneficial increase in breathing power being largely due to physical exercises and increased nutrition.

The urine of the children was examined shortly after admission, and it was found that in three cases albuminuria was present. This was doubtless due to the large amount of proteid present in the school diet : in each case the albumin disappeared when the diet of the child was altered.

In conclusion, it may be pointed out that the open-air school has an important educational influence on the parents : the necessity of sufficient rest, combined with regular, plain feeding and an open-air life, being impressed upon them by the success of these methods in the treatment of delicate children.

DARLINGTON OPEN-AIR SCHOOL.

By F. T. H. WOOD,

M.D., B.S., B.SC. (LOND.), D.P.H. (DURH.),

School Medical Officer.

This school was conducted from May 25 to July 28, 1910, and its special features were its situation "farthest north," the cheap and portable nature of the shelter used, and the fact that only one meal daily was given.

Site and Building.

A fairly open site, adjoining one of the parks, was obtained in the centre of the town. The area enclosed for the school measured 48 by 34 yards, was covered with grass, and had a number of trees, which served to swing hammocks from. One boundary was marked out into plots for gardening.

A portable wooden shelter, with floor-space 20 feet square, was

erected in the middle of the ground. It consisted merely of six stout uprights supporting the roof. The height at the eaves was 8 feet 6 inches, and at the ridge was 15 feet. All the framework was bolted or screwed together, for ease in removal and transport. At a height of 5 feet from the ground an iron curtain-rod rested at each side, and on this was hung a sliding cloth screen, which served as a protection against wind or rain; usually, however, these curtains were pushed back, and the shelter was freely open on all sides. The cost was £33.

Selection of Children.

The commonest conditions qualifying for admission were malnutrition, anæmia, enlargement of glands in neck, and recent operations for tonsils and adenoids. The following occurred among the twenty girls chosen :

| | | | | |
|--|-----|-----|-----|----|
| Nutrition below normal | ... | ... | ... | 17 |
| Enlargement of cervical glands | ... | ... | ... | 11 |
| Adenoids and enlargement of tonsils... | ... | ... | ... | 8 |
| Anæmia | ... | ... | ... | 6 |
| Ear discharge | ... | ... | ... | 2 |
| Lupus | ... | ... | ... | 1 |
| Bronchitis | ... | ... | ... | 1 |
| Persistent vomiting | ... | ... | ... | 1 |

Provision of Meals.

Only one meal daily—a dinner of two courses—was given, in contrast with the practice of other open-air schools. The cost for materials was twopence per head, and the parents paid unless inquiry showed that they were unable to do so through poverty; this was the case with ten children.

The Day's Work.

The time-table avoided the formal lessons usually given, and included practical lessons in arithmetic and mensuration, geography, nature-study, and gardening, while a break of fifteen minutes for play or rest was given morning and afternoon.

Particular care was given to the ingraining of habits of cleanliness. Each child brought a towel, hair-brush and comb, and tooth-brush. At 11.45 they tidied themselves for dinner; dinner-time was usually over by 12.20, and the girls then went to their hammocks to rest or to sleep, under the care of the lady who had served dinner. This rest-time occupied about an hour, and, with perseverance on the part of the ladies, all were quiet, and on some days all slept.

Special attention was paid to breathing exercises, and these were given daily. The four children who were operated on early in the

session for enlarged tonsils and adenoids, and three other cases of mouth-breathing, were watched carefully, and a very distinct improvement was noticed.

A shower-ring was fitted up in the Education Offices near by, and

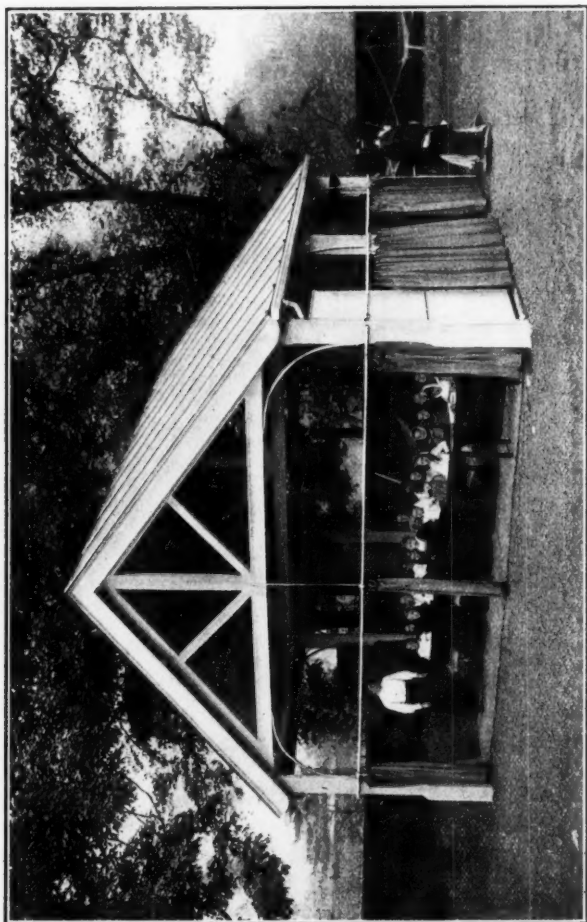


A MODELLING LESSON.

a special feature of the school was the daily shower-bath, which produced excellent results in increased bodily cleanliness, neatness of hair, and general briskness and tone.

The Results Obtained.

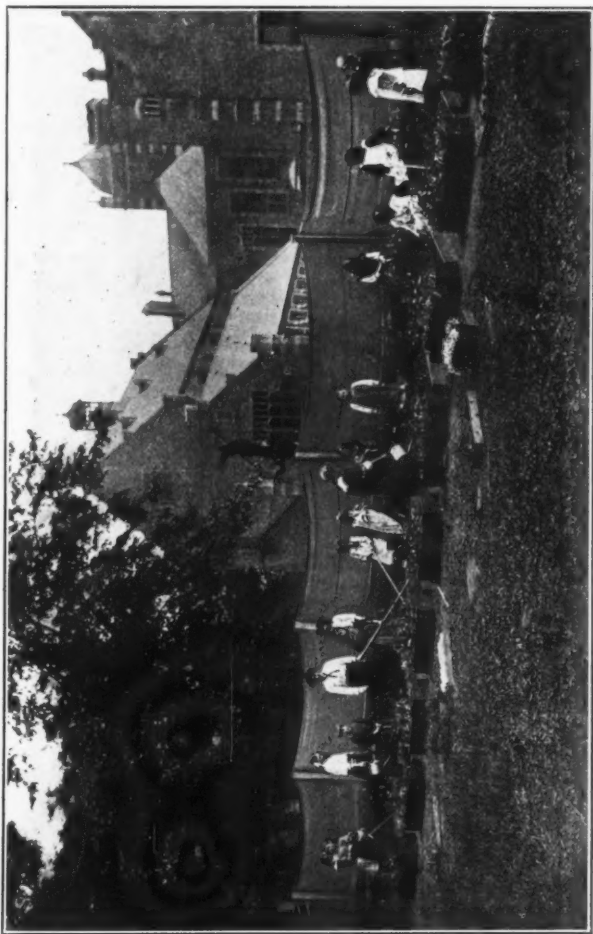
The progress made can be gauged by considering the improvement in the general appearance and carriage, the alterations in weight, the condition of the physical defects, estimations of the hæmoglobin, and



THE SHELTER.

a review of the educational gain ; and of these, I think that the improvement in general bearing and appearance was more marked than was the improvement which can be tabulated statistically.

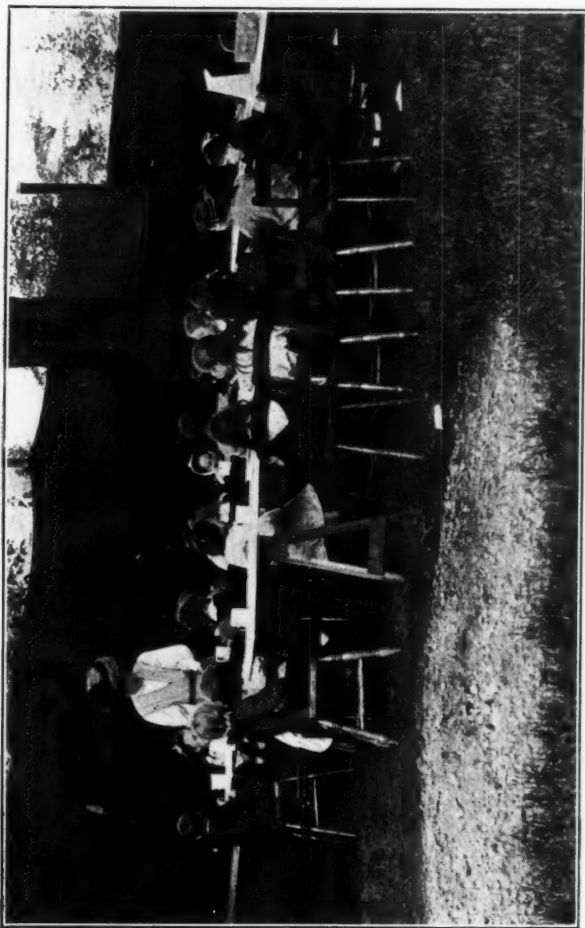
Weight.—The children were weighed weekly, and in nearly every case showed a gradual increase. At the end of the nine weeks there was an average gain in weight per child of 0·73 kilogramme



A LESSON IN GARDENING.

(= 1·6 pounds), as compared with 0·41 kilogramme (= 0·9 pound), which would be the average gain during that period for town girls in their eleventh year. Five girls made less than the usual town gain; one of these had gained 0·8 kilogramme, but lost it during the last

week through a recurrence of her vomiting. The other fifteen made gains as below : Nine gained between 0·41 and 1 kilogramme (0·9 to 2·2 pounds); five gained between 1 and 1·5 kilogrammes (2·2 to 3·3 pounds); one gained 2·45 kilogrammes (5·4 pounds).



THE DINNER.

The observations made in the London open-air schools demonstrated much greater increases in weight, due to the provision of three meals a day, a longer school-day, and a longer session. These increases were not maintained, however, when the children returned

to their ordinary schools, and it is interesting to compare the two groups at the end of six months.

Eighteen of the twenty children presented themselves for re-examination at the end of October, or three months after the closing of the school. The average gain in weight of these girls (average age ten) during the nine weeks at the open-air schools was 0.77 kilogramme, as compared with 2.20 kilogrammes in the London observations; and during the following three months (including the extra weight of winter clothing) was 0.89 kilogramme, contrasted with a loss of 0.5 kilogramme in London. Thus our net gain was 1.66 kilogrammes, as against 1.7 kilogrammes in London.

Hæmoglobin Estimations.—A determination of the amount of hæmoglobin was made in each case by means of Tallquist's hæmoglobin scale, and so an estimate was obtained of the increase in quality of the added weight.

Taking the figure 100 to represent the normal hæmoglobin content, the average figure for the scholars at the beginning was 80.6, and at the end 88.8, or a gain of 8.2. At the commencement of the session seven were below 80 per cent., eight between 80 and 90 per cent., and five between 90 and 100 per cent.; at the end of the session one was below 80 per cent., six were between 80 and 90 per cent., and the remaining thirteen between 90 and 100 per cent. Five children remained stationary, five showed an increase of 5 per cent., four of 10 per cent., five of 15 per cent., and one of 25 per cent.

General Conclusions.

This open-air school has differed from others established in England, notably in its situation and in its cost. The central site and the provision of one meal only has probably made some of the results—the increase in weight, for example—less striking, but this defect seems balanced by the financial gain, and should make it possible for such schools to be maintained in areas that would not otherwise undertake the work.

CRITICAL REVIEWS.

THE TREATMENT OF TUBERCULOUS CONDITIONS BY RADIO-THERAPY.

By A. HOWARD PIRIE,

M.D.,

Physician in X-Ray Department, Mount Vernon Hospital for Consumption ; Chief Assistant in X-Ray Department, St. Bartholomew's Hospital.

TREATMENT of tuberculous conditions by X rays and radium has been carried out during the last eleven years. When it was found that lupus was in some cases cured by X rays, great hopes were raised that the rays would be equally effective in pulmonary tuberculosis and other tuberculous conditions. These hopes have not been realized. Yet there are certain tuberculous conditions which are in some cases cured, and in other cases benefited, by X rays and radium. A review of the reports of such cases during recent years is desirable, so that the value of radio-therapy may be recognized, and its application extended in suitable cases.

Exact methods for measuring the dose of X rays are now more generally used, and more uniform results have thus been obtained.

Action of X Rays.

The action of X rays is greatest on cells in which reproduction is active, more especially where karyokinesis is slow, and on cells of less fixed morphology.¹

The densest cells absorb the greatest amount of energy of the X rays, therefore karyokinetic cells in which the chromatic filaments are condensed absorb most. This action is well shown in the destruction of hairs, sweat-glands, and spermatogenic cells. In a virgin rabbit X-ray irradiation of a mammary gland causes little visible effect, but still if the animal becomes pregnant the gland does not develop.² X rays have another action besides that on growing cells. Crane³ describes upwards of fifty observations of the effects of X rays on the opsonic index. He found in cases of lupus that the opsonic index rose after each X-ray treatment till the fourth treatment.

¹ Bergonie et Tribondeau : " Conséquences Théoriques et Practiques de l'Action des Rayon X sur les Glandes Génitales," *Arch. d'Electricité Méd.*, Bordeaux, 1908, xvi, 590-596.

² MM. Cluzet et Bassal : " Action des Rayons X sur l'Évolution de la Mammelle pendant la Gestation," *Arch. d'Electricité Méd.*, 1908, p. 623.

³ Crane, A. W. : *American Journal of the Medical Sciences*, 1908, New Series, CXXXV. 420.

He considers that X rays do not appear to stimulate the production of opsonins for bacteria in general, but only for those in living tissues brought directly under their influence.

The failures found in X-ray treatment of lupus are, he considers, due to faulty timing of the application of the rays in relation to the opsonic index, or to a wrong quantity of rays. He believes that the rays should be applied twice a week, or even less frequently. Very little work in this direction has been done in England; but if it is confirmed by many observers, then it offers some advantages over the method of vaccine treatment, as the immunizing substance set free under the influence of the X rays is of necessity autogenous, and no bacteriological examination is required.

X rays have also a marked effect on the blood when the bone-marrow is stimulated by their action. This is well seen in splenic anaemia, where the white blood-corpuscles may be reduced from over 1,000,000 per cubic millimetre to normal. Improvement in pernicious anaemia can also be got by the same means.

Lupus Vulgaris.

In many cases lupus has been perfectly cured by X rays. A case treated twelve years ago remains cured to-day.¹ This case was treated every day, and the treatment had to be stopped several times, on account of radio-dermatitis. One hundred and fifty-one sittings were given. Permanent epilation was produced over the area treated, and slight telangiectasis has been produced.

This case illustrates the need for energetic treatment of lupus. In contrast with this case, in which the doses were not measured, is a case of twenty years' duration which was cured in four sittings during seven weeks.² Lupus vulgaris assumes many forms, and different treatments must be used for them. For lupus non exedens as well as for ulcerating lupus, radio-therapy is suitable. Where deep nodules of lupus exist, radio-therapy rarely effects a cure. These nodules must be punctured by galvano-cautery. Instead of using the galvano-cautery for these nodules, Bordier³ recommends fulguration. This means the application of high-frequency sparks to each nodule, in order to destroy them. A free flow of lymph follows, and a crust forms which falls off in about three weeks, and a scar follows which is not quite so good as that got by radio-therapy. For lupus on the extremities, the quickest result is got by scraping followed by radio-therapy.

Radio-therapy has no tendency to produce epithelioma on lupus,

¹ Schönberg, Alb.: *Fort. a. d. Geb.*, Band xiii., Heft 6, p. 391, June, 1909.

² Morton: *Rev. de Thérapie Méd. Chir.*, December 1, 1907.

³ Bordier: *Arch. d'Electricité Méd.*, 1910, p. 305; L. Bizard de Keating Hart et Fleig, Soc. Franç. de Dermatologie et de Syph., *La Méd. Moderne*, April 22, 1908.

but epithelioma may develop on lupus quite apart from X-ray treatment.¹ Owing to the telangiectasis which follows repeated attacks of radio-dermatitis, it has been recommended that lupus on the face should not be treated by X rays.²

Lupus of the conjunctiva and cornea have been successfully treated by X rays. The first case was reported in 1903.³ Other successful cases have also been reported. Small repeated doses were used.³ Cases of lupus which can be cured by Finsen light can also be cured by X rays, and cases which cannot be cured by Finsen light also cannot be cured by X rays.

Lupus Erythematosus.

Numerous cases of success in treating lupus erythematosus by means of X rays have been reported, but also many failures. A slight reaction should be produced by the rays; and if this is not sufficient to effect a cure, a second reaction may be produced, but never a third, or telangiectasis is likely to occur.⁴

Tuberculous Glands.

Many writers⁵ have reported favourably on the treatment of tuberculous glands by X rays. Early cases are most suitable. The treatment must be continued for three months. By that time, if the glands have not considerably diminished, they are almost certainly caseous, and should be removed by operation. After X-ray treatment the glands diminish in size, and remain as hard nodules. Recurrences are rare after successful X-ray treatment. Suppurating glands which have not burst are sometimes absorbed, but more frequently they must be evacuated. If they are allowed to burst while X-ray treatment is going on, and the treatment is continued, they heal up very quickly and leave little scar. Suppurating glands of several months' duration soon close under X-ray treatment, with no keloid formation. The skin around a sinus is particularly sensitive to X rays, and should not be given an epilation dose.

Kienböck recommends maximum doses every three to four weeks, and that the treatment should be continued for several years, if necessary.

¹ Belot: *Arch. d'Électricité Méd.*, 1908, p. 619.

² Mally: *Arch. d'Électricité Méd.*, 1908, p. 315. (I have seen several cases of lupus on the face successfully treated by X rays in which no telangiectases have been visible.—A. H. P.)

³ Stephenson, Sydney: *British Medical Journal*, June 6, 1903; *Lunsgaard Klinische Monatsblätter Augenheilk.* Kunde, vol. xlv., 1906.

⁴ Lassueur: "Le Traitement du Lupus Erythémateux," *Arch. d'Électricité Méd.*, 1909, p. 248; George Booth, "Radium in Lupus Erythematosus," *British Medical Journal*, April 3, 1909.

⁵ Kienböck: "La Radiothérapie des Lymphomes tuberculeux," *Arch. Méd.*, 1910, p. 258; and Johnson, George C.: "Symposium on Roentgen-Therapy," American Therapeutic Society, Philadelphia, May 7, 1900.

Suspected areas should be irradiated, and not simply the enlarged glands themselves.

Action of the Rays on Tuberculous Glands.

The rays do not kill the tubercle bacilli in the glands. They stop the formation of lymphoid granulation tissue. Sclerosis of the tissues follows, with destruction of food for the tubercle bacilli. The treatment should therefore be pushed to its limit, for the presence of the germs gives the possibility of recurrence. X rays are better in early cases than a surgical operation, because at the operation only the evident glands are removed, and the small already infected glands are left, whereas the rays act on both large and small glands. No scars follow the use of X rays; and even when a gland has burst, and heals up under X-ray treatment, the resulting scar is better than that resulting from incision and removal. In inoperable matted cases X rays have done well.

Fresh air and dieting should be combined with X-ray treatment, and the use of tuberculin also helps in some cases. Dr. F. Barjon¹ has always succeeded in effecting a cure of a "cold abscess" by puncturing it, washing out the pus, and injecting 5 per cent. iodoform oil or tincture of iodine, and then applying X-ray treatment.

Puncture may be required from two to six times. The pus gets thicker and less each time. When a tubercular abscess has tender skin adherent over it, and the abscess is ready to burst, similar treatment should be tried, as by this means the best cosmetic result is got. When the pus is too thick to be aspirated, incision and drainage should be carried out. Barjon says puncture succeeds in the majority of tuberculous abscesses, and constantly in cold abscesses.

For neglected suppurating cases and surgical failures with prolonged suppuration, long and patient X-ray treatment combined with ordinary surgical measures gives a cure, but, of course, no æsthetic result. Old fistulæ of one or two years' duration, leading to a gland, heal up under X-ray treatment. Phagedenic ulceration is not suitable for X-ray treatment.

Kienböck has reported diminution in the size of glands inside the chest during X-ray treatment. At the same time cough decreased, dyspnoea diminished, and pain was less. Barjon was satisfied with his results. In children, enlarged tubercular glands should be diagnosed by X rays, and the child should be sent to the seaside.²

Treatment of tubercular glands by X rays has been advocated by many writers, such as Barjon, Barret, Desplats, Ferrand, Heindrix, Krouchnoll Marques, Pirie, Roederer, Robin, Redard.

The treatment must be continued from three to six months, or

¹ Baryon: *Arch. d'Électricité Méd.*, p. 505, 1910.

² Ch. le Roux: *Presse Médicale*, November 27, 1907.

even longer. The general effects of the rays make the patient sleep, the appetite and strength return, and temperature becomes normal. A decrease occurs in the white blood-corpuscles,¹ especially in the mononuclears. The effects to be avoided during the treatment are—(1) The production of erythema; (2) much pigmentation; (3) falling of hair; (4) headache.

So long as the enlargement of a gland is due to gland-cell hyperplasia, X rays will reduce the gland; but when the enlargement is due to formation of connective tissue, X rays will have little result.² Still, in this connection one should remember the slow but complete disappearance of keloid (which is fibrous tissue) under X-ray treatment, which must extend for from nine to twelve months.

Tuberculous Peritonitis.

This disease has been treated by X rays to a very limited extent in this country. Urbino,³ who publishes careful statistics of twenty cases he has treated, concludes that X rays are of use in treating tuberculous peritonitis. A summary of his twenty cases shows that six were treated surgically, and of these two died. Eight other cases were treated by X rays alone; of these, four were cured, two improved, and apparently there were no deaths. The remaining six were treated by X rays and operation, and of these three were cured and one died. His treatment by X rays was twenty minutes, at 6 to 8 inches from the tube, every third day. Slight dermatitis was produced in a few cases. The cases which did best by X-ray treatment were those with chronic ascites and no adhesions. Dr. Georges Belly⁴ recommends the use of X rays (1) in benign cases, where operation seems out of proportion to the gravity of the case; (2) in very grave cases, where operation is out of the question; (3) when operation is refused. A series of twelve chronic cases reported by Balsamoff⁵ were first tapped and then X-rayed. His results were eight cures, and two improved and two not improved. Four remained cured after one year, and two after two years. None had a recurrence of ascites.

Dr. Bircher⁶ concludes, on the other hand, that surgical treatment of tuberculous peritonitis is best. He advocates the use of X rays only in (1) cases of adhesive peritonitis, where surgery has little chance of success, and (2) where the patient would not stand operation; (3) in benign cases; also (4) in cases where exudation

¹ Robin and Bournigant.

² Gray, A. L.: *Journ. Amer. Med. Assoc.*, Chicago, 1, 1909, lii. 198.

³ *Rev. Crit. de Clin. Méd.*, Florence, 1908, ix, 129, 145, 161.

⁴ Belly, Georges: *Arch. d'Électricité Méd.*, 1908, p. 972.

⁵ Balsamoff (Sofia): *Arch. d'Électricité Méd.*, p. 334.

⁶ Bircher, Eugène, (Aarau): "La Tubercul Chronique du Péritoine: son Tra'tement par les Rayons X."

follows operation. and does not disappear in fourteen days ; and (5) when relapse follows operation. Of twelve cases treated by him by X rays alone, six were cured, three died, and two were improved. Of sixteen cases treated by operation and X rays together, 43 per cent. were cured, 31 per cent. improved, 25 per cent. died.

X rays cannot, therefore, be considered as a specific for tuberculous peritonitis, but it seems probable that it has an effect in preventing ascites, and in some cases it brings about a cure.¹

Tubercular Joints and Bones.

Freund's² results in the treatment of tuberculous joints are as follows : Complete cure, 55 per cent. ; improved, 22 per cent. ; no result, 22 per cent. His best results were got in cases in which the synovial membrane only was involved, and in which caries was superficial. He advocates measuring the dose carefully.

When a tuberculous condition of a bone exists in a superficial position, such as in a phalanx, rib, or metatarsal, without retention of pus, X rays are recommended. Benefit is noticed after eight sittings. Each sitting should be at five weeks' interval, and a brisk reaction should follow each one. This amounts to a modified Bier treatment, as the reaction usually lasts for seven to fourteen days, or even longer. Of ten cases treated, six were completely cured, two improved, and two were failures. Hygienic surroundings and surgical help should be combined with the X rays. Iselin³ reports forty-one cases of tuberculous bone disease in which by X-ray treatment he got twenty-four cures, six improved, one failure, and ten under treatment. He uses hard rays and cross-fire. This mode of treatment has not become general, owing to the good results obtainable by surgical means. I have personally seen improvement in two tuberculous joints, and cure in another. In all three cases X-ray photographs, taken before beginning treatment, showed tubercular joints.

Laryngeal Tuberculosis.

Wilms⁴ publishes a successful case of laryngeal tuberculosis cured by X rays. On the other hand, Poyet and Ménard⁴ got no cure in one case. Only two applications of the rays were made, however. It seems unlikely that X rays would cure tuberculosis in the larynx, yet even one successful case should encourage one to use X rays in conjunction with other treatments.

¹ Allavier and Rovere : *Réf. Méd.*, April 20, 1907.

² Freund, L. : *Wiener Med. Wochens.*, 1908 ; *Münch. Med. Wochens.*, No. 41, October, 1909.

³ Iselin : *Arch. d'Électricité Méd.*, 1910, p. 504.

⁴ Wilms, M. : *Bull. Méd.*, No. 21, p. 237, March 12, 1910 ; and Poyet et Ménard : *Bull. Méd.*, Supplement, No. 2, March 9, 1910.

Renal Tuberculosis.

Some degree of success has attended the treatment of renal tuberculosis by X rays. Two cases reported in the *Munch. Med. Wochens.*¹ are as follows :

CASE 1.—A female with general urinary tuberculosis. She had three months of X-ray treatment, and two years later she continued to maintain the improvement that followed X-ray treatment.

CASE 2.—A female with the bladder and left kidney involved. She had five weeks' X-ray treatment, and three years later she was strong and healthy. Treatment was given daily for fifteen minutes. Albumin and bacilli both disappeared from the urine.

Acne Vulgaris.

This disease, though not due to the tubercle bacillus, is frequently met with in tuberculous patients. It yields readily to X rays. Cases of a few months' duration or of several years yield equally well. The treatment should be by small measured doses of half a pastille once a week for six weeks. After the last treatment the part is free from acne, and recurrence is very unusual.

Conclusions.

In considering the benefit to be got by X-ray treatment of a tuberculous condition, one should consider which physiological effect from the rays is desired. A hyperæmia of superficial and deep vessels can be produced, and this effect may be curative. Hyperplasia of lymphoid tissue can be reduced, and rapidly growing cells destroyed. An increase in the opsonic index can be produced. A combination of these definite results may be effective in bringing about a cure; but in order to get these results the dose of the X rays must be carefully measured, and herein is the crux of the whole question. What is the correct dose for each case, and how is it to be applied and how measured? At many hospitals measurement is made by a haphazard method of "five to ten minutes two or three times a week." This is no measurement, and rather a tempting of Providence; so that if the patient escapes merely uncured he is lucky, for he runs the risk of an X-ray burn. The method which I believe to be best is to give maximum doses at intervals of two, three, or four weeks, and to measure the dose of the rays by Sabouraud's method combined with another method as a control. For deep-seated disease the X-ray tube should be removed as far as is compatible with the delivery of the dose within half an hour. Hard rays should be used, and further

¹ *Munch. Med. Wochens.*, 1907, No. 51.

hardened by filtration through 1 millimetre of aluminium. Cross-fire should be employed whenever possible.

Lupus vulgaris and tuberculous glands are the only tuberculous diseases which one can definitely say can be cured by X rays.

The others reviewed above have not yet stood the test of time and sufficient observation. Certain tuberculous joint and bone affections deserve more treatment by X rays than they have received in this country.

PERSONAL OPINIONS.

REDUCTION IN MORTALITY FROM PHTHISIS.

By J. E. BULLOCK,

M.D., M.R.C.S.

A STUDY of the Annual Summary for 1910¹ recently issued by the Registrar-General shows a very satisfactory reduction during the year in the deaths from phthisis of persons belonging to London. The deaths numbered 5,555 (3,437 males and 2,118 females), corresponding to a rate of 1·14 per 1,000 living, or 0·24 below the average rate in the five preceding years. The mortality in the several boroughs, after distribution of deaths in public institutions among the boroughs in which the deceased persons previously lived, ranged from 0·55 in Lewisham to 1·98 in Holborn. In the following boroughs it was below 1·00: Hampstead, 0·59; Kensington, 0·77; Paddington, 0·84; Wandsworth, 0·86; Stoke Newington, 0·91; Greenwich and Fulham, 0·94 each. In the following it was above 1·00: Woolwich, 1·01; Battersea, 1·03; Hammersmith, 1·04; Hackney and Camberwell, 1·08 each; St. Marylebone, 1·10; City of Westminster, 1·12; Islington, 1·13; Chelsea, 1·16; Lambeth, 1·17; Deptford, 1·19; St. Pancras, 1·28; Stepney, 1·31; Poplar, 1·36; Bethnal Green, 1·43; Shoreditch, 1·49; Finsbury and City of London, 1·70 each; Southwark, 1·74; Bermondsey, 1·76. It was below the average for the preceding five years in every borough. In Edinburgh the rate per 1,000 was 0·97; in Glasgow, 1·21; in Dublin, 2·34; in Belfast, 2·11. The very low rate in Edinburgh may be considered due to the benefits of the Tuberculosis Dispensary system (so admirably worked under the initiative of Dr. Philip), the benefits of which have extended to Glasgow. Dublin and Belfast have improved under the energetic anti-tuberculosis campaign in Ireland. In the five years, 1881-1885, the death-rate from phthisis of London and Edinburgh were nearly equal (2·22 and 2·12 per 1,000), and have steadily declined since, but (as stated above) in 1910 the death-rate for London was 1·14 as against 0·97 for Edinburgh. In the same five years the death-rates for Glasgow, Dublin, and Belfast were about equal; Glasgow and Dublin

¹ "Annual Summary of Marriages, Births, and Deaths in England and Wales and in London," 1910, published by authority of the Registrar-General.

have steadily declined since ; Belfast remained stationary for the first fifteen years, but since 1895 has shown a marked decline.

A corresponding favourable decline in mortality attributed to phthisis has occurred in many other countries, but not to the same extent as in London and Edinburgh. For 1910 the death-rates per 1,000 are as follows : Rio de Janeiro, 3·96½; Paris, 3·66; Trieste, 3·56; St. Petersburg, 2·90; Breslau, 2·59; Moscow, 2·50; Vienna, 2·49; Milan, 1·90; New York, 1·81; Berlin, 1·76; Turin, 1·66; Dresden, 1·52; Amsterdam, 1·30; Hamburg, 1·26; Rotterdam, 1·21; Copenhagen, 1·14; The Hague, 1·12. In Australia we have the satisfactory figures of 1·00 for Melbourne, and 0·72 for Sydney. All the above towns show a steady decline in each quinquennium since 1881-1885.

In London, the percentage of deaths at home as against deaths in public institutions (hospitals, homes and sanatoria, workhouses and lunatic asylums) was over fifty in the following boroughs : Kensington, Hampstead, Paddington, Stoke Newington, Lambeth, Battersea, Wandsworth, Lewisham, and Woolwich. In nearly every London borough more females than males died at home. The proportion of deaths in public institutions was greater in those boroughs in which the conditions are such as to render more difficult the control of the disease, when the patient remains at home—*e.g.*, in Holborn, which had the highest death-rate from phthisis, 70·7 per cent. males and 60·9 females died away from home. The Registrar-General remarks : "It may fairly be urged that in districts (like Holborn) the conditions favour the spread of the disease so much that without segregation, the death-rate might well have been higher still."

It is too early yet to comment upon any reduction in the mortality from phthisis in the three London boroughs of Paddington, Kensington, and Marylebone, in which Tuberculosis Dispensaries have been established, but there is every reason to hope that these dispensaries will have a marked effect in diminishing the mortality. In London most deaths have occurred between the ages of thirty and forty-five, both in males and females, but in females more have died under thirty than over forty-five ; hence it appears that the power to resist the disease, as age advances, is less in females.

INSTITUTIONS FOR THE TUBERCULOUS.

THE POTTENGER SANATORIUM FOR DISEASES OF THE LUNGS AND THROAT, MONROVIA, CALIFORNIA, U.S.A.

THIS institution was opened in December, 1903, at which time it had accommodation for eleven patients. It has steadily grown until at the present time it has accommodation for 100. Twenty patients are accommodated in the administration building, the rest living in bungalows, which consist of a sleeping-room and a dressing-room. Three sides of the sleeping-room are open, being protected only by wire screening. Such patients as offer reasonable hope of cure or making material improvement are received into the institution.

The sanatorium is situated on the southern slope of the Sierra Madre Mountains, 1,000 feet above sea-level, at the mouth of one of the most beautiful canyons in Southern California. It is placed in the very midst of orange groves and vegetation of a semi-tropical nature. The sanatorium is thirty miles from the ocean, and is far enough inland to escape most of the sea fog and dampness, and yet not so distant but that it receives the stimulating and cooling marine breezes.

The movement of the winds in our district is very gentle, usually ranging from three to eight miles per hour. The air of the foothills in which the institution is located is moderately dry. During the day the air comes from the ocean, but is robbed of most of its moisture while crossing the valley below. At night the dry winds blow from the mountains and desert to the north. This location escapes for the most part even the few wind-storms and dust-storms which occur in other parts of the valley.

The institution is located in a beautiful park of 40 acres, having a charming view of the great San Gabriel Valley to the south, with the ocean in the distance, and the Sierra Madre Mountains, which tower to an elevation of 6,000 feet, lying immediately to the north.

The climate is ideal for tuberculous patients. Nearly every night of the year is cool; yet the winters are not cold, the lowest temperature registered since the sanatorium has been established being 31° F. The most delicate plants grow unprotected throughout the year. The summers are always delightful, the heat of the days being for the most part pleasant, and the nights comfortable.

The institution is located sixteen miles from Los Angeles, which is now a city of 350,000 people, with which it is very closely connected by an electric line affording frequent service during the day. It is conducted on strictly scientific lines. While climatic conditions are taken advantage of in every way possible, yet these are not depended



THE POTTENGER SANATORIUM FOR DISEASES OF THE LUNGS AND THROAT, NONROVIA, CALIFORNIA.

upon alone for the amelioration and cure of the patients, but are reinforced by the best scientific treatment that is known. The Pottenger Sanatorium is conducted so as to secure close personal supervision. Every patient in the institution is seen twice daily by members of the medical staff. The principal aim of the institution is to produce reliable results. The rates range from \$32.50 to \$52.50 per week, which we consider is as low as is consistent with giving the very best service.

One great advantage of this institution is that it is situated in a region which offers the ideal climate for the tuberculous patient to live in after completing treatment, and where opportunities for making a livelihood are to be found on every hand.

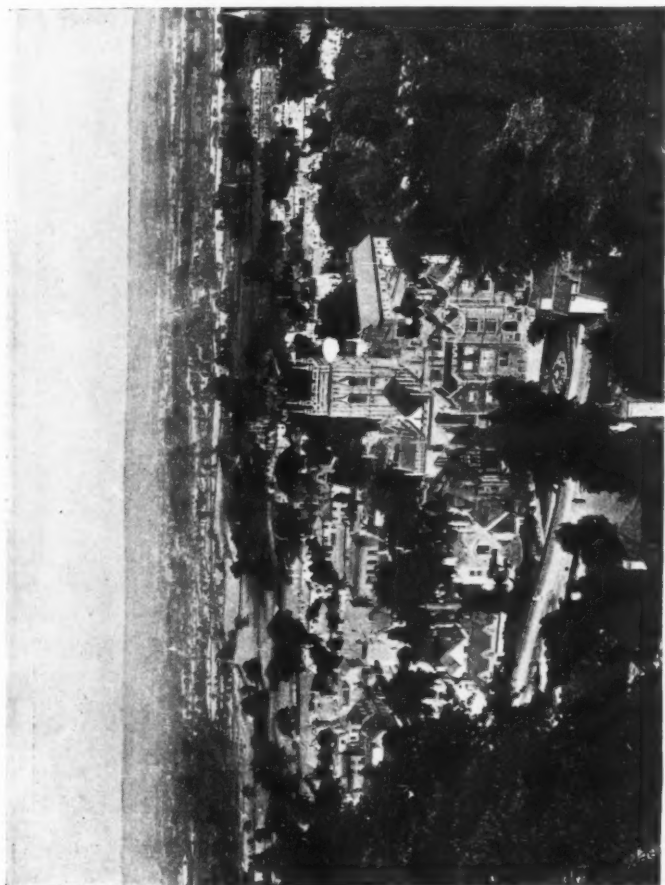
F. M. POTTENGER, A.M., M.D., LL.D.,

Medical Director.

HEALTH STATIONS.

MALVERN.

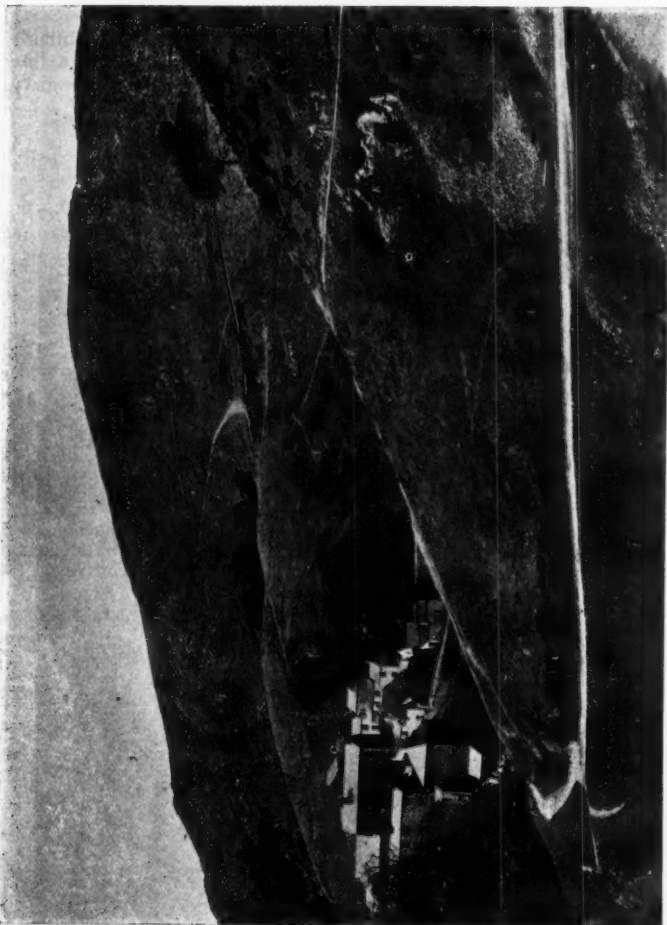
ON the eastern and western slopes of the syenitic hills, which obtrude themselves in the valley of the Severn in Worcestershire, in a line almost due north and south—hills which, according to geologists,



MALVERN : A VIEW FROM THE HILLS.

were old while the Alps were still young—is situated the group of townships known as Malvern. The hills, composed of igneous rocks of pre-Cambrian age, known as Archæan, are not only Malvern's

greatest charm, but they form the basis of her claim to be one of the leading inland health resorts of the kingdom ; for it is owing to their peculiar chemical composition that the Malvern water is of such unique excellence. For upwards of three hundred and fifty years this water has been the theme of song and story ; and in 1906 Dr. John C.



MALVERN : A VIEW ON THE NORTH HILL.

Thresh, of the London Hospital Medical College, said : " This water is doubtless one of the softest and purest waters found in Nature. It is practically free from organic matter and bacteriologically is of the highest degree of purity." This is confirmed by the full testimony of Sir Henry Thompson, who wrote in the *Nineteenth Century* : " No

purser water exists in any natural sources than that of our own Malvern springs."

Not only are the hills important as the feeding-ground of the springs which become Malvern's water-supply, but they have a peculiar effect on the air. This is due to resilience, the rebound of the keen chilly blasts experienced on the plains causing comparative quiet and softness on the eastern slopes.

To these and other causes may be ascribed the longevity which has so frequently been remarked among the inhabitants of the district and which was noted by Piers Plowman when he sang:

" All around Malvern Hill
A man may live as long as he will,"

A noteworthy feature of the climate is the absence of extremes. The mean minimum temperature of January of the years 1891-1900 was 33·6° F., while the mean maximum temperature of July during the same period was exactly 70°. This equability and low diurnal range is very striking.

As regards rainfall, it need only be stated that the average from 1897-1909, inclusive, was 28·74 inches to show that the hills do not increase the rainfall of the district, and that the moisture of the rain-bearing south-west winds has been condensed on slopes nearer the sea than those of the Worcestershire Beacon.

Geographically, Malvern, which is easily accessible from all parts of the kingdom, lies in the heart of a district replete with interest to the archaeologist, historian, geologist, and botanist. Easy motor trips may be made to the battle-fields of Evesham, Tewkesbury, and Worcester; to the Abbeys of Tewkesbury and Pershore; to the cathedrals of Worcester, Gloucester, and Hereford; to the ruins of Tintern; to the ancient Camp on the Herefordshire Beacon; as well as to places rendered famous by Edna Lyall, Jenny Lind, Mrs. Browning, Mrs. Craik, Charles II., the Old Man of Ross, Oliver Cromwell, John Milton, and William Shakespeare.

Incidentally it may be mentioned that four packs of foxhounds hunt the neighbourhood, and excellent sport is enjoyed; while for the delectation of the devotees of golf there are two fine golf-courses, one of eighteen holes.

ARTHUR O. HOLBECHE, M.R.C.S., L.R.C.P.,
Senior Hon. Surgeon, Malvern Hospital.

NOTICES OF BOOKS.

THE PROBLEM OF IMMUNITY.

Dr. Much's new book¹ on immunity is intended for the enlightenment of medical practitioners and students, and seems to fulfil its purpose well. The author has evidently a practical familiarity with his subject, and appears to have worked personally on no few of the problems involved, and this has led to a dogmatism rather useful to a work of this scope. At the same time, the subject matter is laid before the reader in such clear and simple language as to be readily followed with but little previous knowledge. After short discourses on Immunity and Virulence and Active and Passive Immunity, he takes up the two great divisions: Toxin Immunity, and Protection against Bacteria producing Endotoxins Only, and deals with these in a couple of chapters. An interesting statement of the problem of Anaphylaxis follows, and after this a long chapter on Antibodies deals in some detail with agglutination, bacteriolysis, opsonic reaction, fixation of complement, and allied subjects, more especially from the side of their diagnostic value. Farther on a couple of pages are given to vaccine-therapy (in a book of 260 pages!), and the latter end of the volume is devoted to individual diseases, at the conclusion of which comes a short section on Tuberculosis. Here the teaching of Behring and his followers, the doctrine of childhood infection and subsequent immunity, is clearly, though shortly, put forward, but the subsequent sections on the serum- and vaccine-therapy of tuberculosis are handled with less skill, and appear somewhat scrappy. As must happen in a work of this scope, omissions are detectable, and certain statements invite criticism. Thus, in dealing with anaphylaxis, and under the heading of Diphtheria, the possible dangers of anaphylaxis in the human are somewhat too lightly put aside. Asthma is mentioned as, in many cases, a phenomenon of this nature, but no warning note is sounded against the danger of serum injections in asthmatics,—danger so tragically exemplified in the cases collected by Gillette in America, when sixteen deaths occurred among thirty cases attacked with symptoms. In the section of vaccine-therapy, also, many in this country would take exception (with a smile!) to the dose of one million staphylococci recommended, with increase by one million only at each further injection. The book has no bibliography, and seems to us too opinionated, and consequently incomplete, for the bookshelf of the pathologist; but it does not compete for this, and as a textbook for the practitioner and student, for whom it is meant, it can safely be recommended.

CLIVE RIVIERE, M.D.

¹ "Die Immunitätswissenschaft—Eine Kurz Gefasste Übersicht über die Immunotherapie und Diagnostik für praktische Ärzte und Studierende. Von Hans Much. Pp. 260. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1911. Preis M. 7.20: geb. M. 8.

TUBERCULOSIS AND CHILDREN.

One feature of the arrangement of Dr. Miller's new book¹ on the diseases of children is that the various bacterial infections, such as the tuberculous, the rheumatic, the pneumococcal, and others, are classified and described in detail as such. As the author explains, this arrangement is especially suitable for the description of disease in children, in whom there is such a tendency towards generalization of infection. The section on tuberculosis gives sufficient prominence to the differences between that disease in adults and in children, arranged as it is under headings dealing with the manifestations of the tuberculous infection as it affects the various systems. The author points out that there is evidence that the bronchial glands alone may be infected from material ingested as food or from air-borne bacilli which adhere to the moist linings of the mouth and nose and are swallowed; in this connection he points out that tuberculous infection is very common at the age at which the child is just beginning to crawl and walk, but he does not find the evidence as to routes of infection conclusive as yet. In dealing with the prognosis of the two types of tuberculous peritonitis, the plastic and the ascitic, he states that, though the ascites may disappear, there is often plastic peritonitis as well, so that the prognosis is not always better in the ascitic type. As Dr. Miller says, in the diagnosis between bronchiectasis and pulmonary tuberculosis it is well to remember that most cases of bronchiectasis are due to a non-tuberculous pneumonia. It is rather striking how often one finds that cases of bronchiectasis, which at first seem to be almost certainly tuberculous, are found not to be so on careful examination. The figures quoted, putting the frequency of congenital heart disease in Mongolian imbeciles at 36 per cent., are apt to be misleading, as other observers give much lower figures. One does not agree that "the birth of one idiot child does not predispose towards mental deficiency in later-born children," because Dr. Tredgold found that about one in every ten or eleven of the other children in families containing an idiot child were mentally affected. As Dr. Miller says, there is no great risk of scurvy from the use of the dried milks in infant feeding; the advantages of these milks are so very great, when facilities for the proper preparation of cow's milk are lacking, that it is a pity to limit their use through fear of what is really an uncommon disease. The book is most carefully thought out and arranged, the illustrations are very good, and the only fault is that the type is somewhat small. There is no doubt that Dr. Miller has made a very valuable contribution to the literature dealing with the diseases of children.

C. PAGET LAPAGE, M.D.

TUBERCULOSIS AND NATIONAL HEALTH.

Among the new and instructive works constituting the "Home University Library of Modern Knowledge" being issued by the enterprise and public-spirited action of Messrs. Williams and Norgate

¹ "The Medical Diseases of Children." By Reginald Miller, M.D., M.R.C.P., Physician to Out-patients, Paddington Green Children's Hospital, etc. Bristol: John Wright and Sons, Ltd. 1911. Price 12s. 6d. net.

is a notable little volume by Dr. W. Leslie Mackenzie,¹ the well-known Medical Member of the Local Government Board for Scotland, and author of "Medical Inspection of School-Children" and "Health of the School-Child." The volume is a lucid and concisely-presented exposition of the problems of health and disease as they relate to individual welfare and national progress. At a time when the Chancellor's great scheme is in the thoughts of all workers for social advancement this stimulating and informing little book should have a wide circulation. Two chapters are devoted to a consideration of the tuberculosis problem. Dr. Mackenzie holds that "the mere fact that children born of tuberculous fathers and mothers do, in exceptional members, contract tuberculosis, does not prove that in the healthy state their tissues are exceptionally susceptible; for there is, by hypothesis, no obtainable evidence that their tissues were ever in a healthy state. Before conception they may have been poisoned on the father's side or on the mother's side, as is known to occur in syphilis; after conception they may have been continually poisoned during the whole period from conception to birth. If, after birth, they show signs of exceptional predisposition, this is precisely what, by hypothesis, we should expect." This suggestive view requires to be followed up. The chapter on "The Administrative Aspects of Tuberculosis" is a particularly valuable one coming from so experienced an observer and administrator as the author. Such a statement as the following indicates the broad outlook which is taken: "Hitherto men have rested the significance of the notification of phthisis on the fact that it is an infectious disease. This is important, but it does not explain the real significance of notification. This significance lies rather in the fact that, when a disease is once notified, the patients must be dealt with, not in the mass, but as individual cases." We specially commend to the thoughtful notice of our readers Dr. Mackenzie's comments on the "red herrings" that are persistently drawn across the administrative scent, for they are pregnant with profound wisdom. There is much other matter in this gospel of hygienic righteousness which we would like to approve, particularly the sections on the house as home, disease and destitution, insurance and sickness, and the health movement; but the dainty little volume is available for all at the marvellously low price of one shilling, so there is no reason why it should not be a possession of every intelligent man and woman.

THE NINTH INTERNATIONAL TUBERCULOSIS CONFERENCE.

This gathering of representative students of the tuberculosis problem from all the progressive nations of the world was held in Brussels from October 6 to 8, 1910, and Professor Dr. Pannwitz, the Secretary-General of the International Anti-Tuberculosis Association,

¹ "Health and Disease." By W. Leslie Mackenzie, M.A., M.D., D.P.H., F.R.C.P.E. A volume in the Home University Library of Modern Knowledge. Edited by Herbert Fisher, M.A., F.B.A., Professor Gilbert Murray, D.Litt., LL.D., F.B.A., Professor J. Arthur Thomson, M.A. Pp. 254. London: Williams and Norgate. 1911. Price 1s. net.

has lost no time in issuing the bulky volume of its transactions.¹ It is a worthy record of excellent work, which should be available for every serious student of tuberculosis, for it contains data as to means and measures, and affords particulars regarding weapons which have proved effective in the crusade against tuberculosis in many lands. Indeed, the most valuable section of the volume is that which contains "Reports on the Progress of the Tuberculosis Campaign in the Different Countries." Among much matter of great importance are records of clinical and experimental studies by Landouzy, Arloing, Calmette, Raw, and Sims Woodhead. There are also communications and reports of discussions on the protection of children from tuberculosis; also tuberculosis and school-life. A welcome sign of the times is afforded by the records of a section conducted by representative women on woman's place and work in the campaign against tuberculosis. The whole volume is a worthy record of good work in a noble cause. The next meeting of the Conference takes place at Rome on September 23 and 24, 1911.

A BRITISH DIRECTORY OF SANATORIA.

Sanatoria for consumptives and other sufferers from tuberculosis now exist in ever-increasing numbers in all parts of the British Isles. There is every reason to believe that in the near future their number will be considerably increased, for, whatever their deficiencies and limitations, sanatoria are indispensable links in the chain which, it may be hoped, will ultimately prove strong enough to fetter the "Captain of the Men of Death." The new edition of the "British Sanatoria Annual" appears at an opportune time, when the pros and cons of the sanatorium are being widely discussed.² The book provides a reliable guide not only to private sanatoria, but also to those that are free or admit patients at reduced rates or under special arrangements with municipal and other authorities. A section is also devoted to "Homes and Convalescent Institutions." The book is well printed, admirably illustrated, and affords just the information which will help doctors to advise, and patients and their friends to decide, as to the suitability of a sanatorium for any given case. We venture to suggest that the usefulness of the Annual would be much increased if in next year's issue a series of signed articles on the establishment, equipment, maintenance, and management of sanatoria for all classes of the community could be arranged for. Information is required not only regarding sanatoria, but respecting the principles and practice of sanatorium treatment. The volume might well contain particulars regarding institutions, including open-air schools and preventoria, for tuberculous and tuberculously-disposed children. The work will be invaluable for reference, and a copy should be within

¹ Bericht Neunte Internationale Tuberkulose-Konferenz (Report of the Ninth International Tuberculosis Conference, Brussels, October 6 to 8, 1910). By order of the Board of Management of the International Anti-Tuberculosis Association. Edited by the Secretary-General, Professor Dr. Pannwitz. Pp. xxiii + 552. Berlin-Charlottenberg: Internationale Vereinigung gegen die Tuberkulose, 137, Berlinerstrasse. 1911.

² "The British Sanatoria Annual." Pp. xx + 130. London: John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, W. 1911. Price 3s. 6d. net.

the reach of every doctor having to advise in regard to the selection of a suitable institution for consumptive and other tuberculous patients.

THE EDINBURGH CONFERENCE ON TUBERCULOSIS.

In a recent number of this journal there appeared an article on the work of the Edinburgh Conference on Tuberculosis. We therefore gladly welcome the very presentable volume of the transactions of this important gathering.¹ It is a well-arranged and authoritative record of a meeting which greatly stimulated anti-tuberculosis measures in Scotland, and the printed page will do much to perpetuate this influence and to widen its area of action. The volume contains papers and records of discussions on the avenues of infection in tuberculosis, preventive measures and administrative control of tuberculosis, the incidence of tuberculosis in childhood, the working man in relation to tuberculosis. Particulars are also given concerning the Tuberculosis Exhibition, addresses delivered at the Edinburgh Board Schools, and the inauguration of the farm colony of the Royal Victoria Hospital. Not the least impressive portion of this notable volume is that which records Professor Osler's beautiful Sunday service address on "Man's Redemption of Man." Such a book as this cannot be reviewed in accordance with customary procedures; we trust, however, that sufficient has been indicated to demonstrate its practical value to all workers engaged in the conflict with tuberculosis. Certainly all concerned in any way in the conduct of the Edinburgh Conference on Tuberculosis and in the preparation of these satisfying Transactions merit congratulations, and should be accorded sincerest thanks.

AN AMERICAN TUBERCULOSIS DIRECTORY.

The American National Association for the Study and Prevention of Tuberculosis, under the guidance of its expert Executive Secretary, Dr. Livingston Farrand, and his enthusiastic assistants, Dr. Philip P. Jacobs and Dr. Thomas Spees Carrington, aided by many willing and skilful workers, is accomplishing a service for the United States of America the value of which is incalculable. The labours and accomplishments of this Association should furnish stimulus and models for all other progressive nations. Chief among the notable publications issued by the Association is the valuable "Directory." A new edition has just appeared and forms a monument of industry and painstaking research.² It has been prepared under the direction of Dr. Philip P. Jacobs, to whom we accord our heartiest congratulations. The volume affords a very complete reference to all the institutions, associations, and other agencies dealing with tuberculosis

¹ "National Association for the Prevention of Consumption and Other Forms of Tuberculosis: Transactions of Edinburgh Meeting and Conference on Tuberculosis," July, 1910. Pp. 219. Edinburgh: Morrison and Gibb, Ltd. 1911.

² "A Tuberculosis Directory, containing a List of Institutions, Associations, and Other Agencies dealing with Tuberculosis in the United States and Canada." Compiled for the National Association for the Study and Prevention of Tuberculosis. By Philip P. Jacobs, Ph.D., Assistant Secretary. Pp. 331. New York: 105, East Twenty-second Street. 1911.

in the United States and Canada. Great Britain may well express its pleasure that Canada has participated in the benefits of this volume. Some day, perhaps, Dr. Jacobs will throw his editorial line across the Atlantic and include the enterprises in these slow-moving old-fashioned islands. The Directory gives particulars of sanatoria, hospitals and day-camps, dispensaries, clinics and classes, open-air school and classes for children. Lists are provided of hospitals for the insane and penal institutions making special provision for tuberculous cases, and all Associations and Committees and other organizations existing for the study and prevention of tuberculosis in the United States and Canada. A useful feature is the well-arranged précis of the legislative measures which affect tuberculosis in the United States. Altogether the work is one which deserves the fullest praise for all who have co-operated in its production.

A PUBLIC HEALTH DIRECTORY.

The Editor of the *Medical Officer* has accomplished a public service by the publication of his Directory.¹ The second issue of this practical reference work is a conspicuous advance on the edition of last year ; it is larger and better in every way. We anticipate a long and useful career for this publication, which undoubtedly meets a real need. The volume opens with a Public Health Calendar ; it might be an advantage to arrange for a blank page opposite each month for the insertion of local engagements. Then follow particulars of degrees and diplomas in public health and the personnel of the Local Government Boards for England and Wales and Scotland and the Board of Education. Details are given respecting the powers and duties of a Medical Officer of Health. The Directory proper provides in alphabetical order particulars regarding the health authorities of England, Scotland, and Wales, education authorities and officials concerned in the medical inspection of school-children, medical officers of health, school medical officers and other medical men (women are included in the list), holiday appointments in the public health service, public analysts, dental officers, veterinary officers and inspectors, sanitary inspectors, women sanitary officers, and also health visitors, school nurses and inspectors of midwives. There is a list of isolation hospitals and also a directory of the matrons and assistant-matrons of isolation hospitals. Finally, the names with particulars, are given of the leading associations and societies dealing with matters touching the public health. The scope of the volume is therefore seen to be an extensive one. As far as we can ascertain, a high level of accuracy and completeness has been attained. The work affords abundant evidences of the rapid growth of a State organization for the prevention of disease, the protection of health, and the restoration and alleviation of the disordered.

THE CONQUEST OF CONSUMPTION.

In our last issue we noticed the popular edition, recently issued, of the well-known work on "The Conquest of Consumption," written by

¹ "The Public Health Service Directory and Year-book." Compiled by the Editor of the *Medical Officer*. Pp. 394. London : Hodgetts, Ltd., 36-38, Whitefriars Street, E.C. 1911. Price 7s. 6d. net.

Dr. Arthur Latham and Mr. Charles H. Garland. It was therefore with no little surprise that we received another work bearing the same title. It is inexplicable that so well-read and experienced an expert as Dr. E. W. Diver should have allowed himself to fall into so unfortunate and irreparable a blunder. Dr. Diver's book,¹ although bearing the same title as that written by Dr. Latham and Mr. Garland, is a book of a very different class. It is apparently intended for lay readers, and especially those who are tuberculous or tuberculously inclined. The author's purpose is indicated in his preface: "I have endeavoured in the following pages to give expression to thoughts which have often occurred to me during twelve years spent in close association with consumptive patients. Much of the subject-matter has been written from notes taken down during conversation with patients in the ordinary course of sanatorium duty, and embraces information on various points which my experience has led me to regard as useful and interesting to sanatorium patients." Many medical practitioners will doubt the utility of such a work as this. In right hands, no doubt, it may be of service, and certainly it is of interest in revealing something of the mental standpoint and practical methods of one who for many years has been engaged in sanatorium practice. The book opens with a general introduction dealing with the nature of tuberculosis and the spirit which should guide physician and patient in combating it. This is followed by altogether inadequate sections on heredity and resistance. The major part of the volume consists of description of sanatorium procedures, illustrated by not very effective or instructive photographs of scenes in the author's private "Belle Vue" Sanatorium. There are, however, two good pictures of the canvas tent now in use at Dr. Norman Marrett's "Merivale" Sanatorium, near Chelmsford.

HEALTH AND HOLIDAY RESORTS.

Travel is now an agent universally accepted as possessing prophylactic and therapeutic virtues of the highest order; and health and holiday resorts in this and other lands clamour for recognition with an insistence and extravagance which is perplexing and oftentimes confusing. Fortunately, many reliable guides are now available, and these, when carefully considered and read between the lines, generally afford helpful direction.

Among the health and holiday stations of the Playground and Sanatorium of Europe, the Bernese Highlands have won world-wide fame. Not only in summer, but now even in winter, many resort to Grindelwald, Beatenberg, Murren, Adelboden, and some of their

¹ "The Conquest of Consumption: Containing Advice to Sufferers Before, During, and After Sanatorium Treatment, with Practical Suggestions for the Avoidance of Infection and as to the Conduct of the Campaign against Tuberculosis." By E. W. Diver, M.D., M.R.C.S., L.R.C.P., late Resident Physician, Belle Vue Open-air Sanatorium, Shotley Bridge (now closed), author of "Consumption: its Causation, Prevention, and Treatment." Pp. xvi+135, with six illustrations. London: John Bale, Sons, and Danielsson, Ltd. 1911. Price 2s. 6d. net. [We have received an intimation that "in all future editions the work will be issued under the title of "Consumption: its Prevention and Treatment."—EDITOR B.J.T.]

less-known neighbours. To all who intend to visit the Bernese Oberland we commend Mr. Julian Grande's new guide-book.¹ It is a compact, up-to-date, well-printed, attractively illustrated, reliable handbook, with maps and matters perfectly suited to its purpose. Pfarrer Gottfried Strasser, the popular "Glacier Pastor" of Grindelwald, contributes an informing chapter on "The Manners and Customs of the Bernese Oberland"; Herr H. Hartmann of Interlaken provides a sketch of "The Bernese Oberland in Ancient and Modern Times"; the Rev. W. A. Coolidge, M.A., explains "How the Oberland came to Berne"; Dr. R. Jenzer writes on "The Geology and Topography"; and Mr. C. A. Barnicoat gives information on the wild flowers of the district. The practical notes concerning routes, expenses, money, outfit, language, and the like will smooth away most difficulties. It may also be mentioned that a description is given of every winter resort at present available, with full particulars as to the hotel winter tariffs, ice rules, and the various sports for which each district is best suited. Altogether this inexpensive pocket guide is to be thoroughly recommended.

Mr. Arnold H. M. Lunn, son of Sir Henry Lunn, M.D., who has done so much to open up Switzerland for winter sports, has published in "The Alpine Ski Club Guides" a capital little volume on ski-ing routes about Montana, Kandersteg, Adelboden, Zweisimmen, Gstaad, Chateau d'Ex, and Villairs. This, the first English ski-ing guide book to be issued, is a praiseworthy attempt to provide lovers of the ski with a reliable handbook. "Except where the contrary is distinctly stated, no route is suggested of which a contributor has not personal knowledge." Even now during summer days this volume should be obtained and studied, so that visitors to the Bernese Oberland in summer may prepare for a return visit in winter, with plans completed for successful ski-running. The volume contains valuable notes on mountaineering on ski, and there is an excellent bibliography. We gather that this is the commencement of a series of manuals.² Mr. Lunn is certainly to be congratulated on his first volume.

The favoured few who are able to enjoy their excursions for health or holiday with the luxuries of a motor-car will do well to consult Mr. A. J. Wilson's very practical manual.³ It is admirably arranged to afford information "at a glance" respecting the best routes in the British Isles and France. This is accomplished by the provision of sketch-maps and well-ordered "trips." General information is given respecting the districts travelled, and many data of a thoroughly practical character.

¹ "The Bernese Oberland in Summer and Winter: a Guide," By Julian Grande, F.R.G.S., Member of the Swiss Alpine Club. Pp. 201, with illustrations and maps. London: Thomas Nelson and Sons. 1911. 3s. 6d. net.

² "The Alpine Ski Club Guides: The Bernese Oberland." Part I. By Arnold H. M. Lunn. Pp. viii+135. London: Horace Marshall and Son, 125, Fleet Street, E.C. [Mr. Lunn hopes to issue a guide-book every year, and will be grateful if other ski-runners will send him information addressed to him at Balliol College, Oxford, or after September, 1911, to Oldfield House, Harrow-on-the-Hill.]

³ "Motor Trips at a Glance in England, Wales, Scotland, Ireland, and France, with Illustrations of Roadside Curiosities." Edited by A. J. Wilson. Pp. 411, with sketch-maps and illustrations. London: Published for the Dunlop Pneumatic Tyre Co., Ltd., by A. J. Wilson and Co., Ltd., 154, Clerkenwell Road, E.C. 1911. Price 2s. 6d.

Dr. Harold Morré, of Berlin, has prepared a convenient alphabetically arranged and well-illustrated guide to some of the more important health resorts of Germany and other European countries, which medical practitioners will find of service for purposes of reference.¹

MANUALS FOR MEDICAL PRACTITIONERS AND WORKS OF REFERENCE.

At a time when the attention of all sorts and conditions of men and women is being concentrated on the Chancellor's scheme for national insurance, doctors and others personally interested will be well advised to procure and study the compact and conveniently arranged volume dealing with the whole subject recently issued by Messrs. Hodder and Stoughton.² Here is provided in concise form a statement for the Bill and an outline of its provisions, a detailed memorandum, the text of the Bill, explanation of its nature and scope, and, last, but not least, a very complete index.

"The Local Government Annual"³ for the present year retains its customary form, and is marked by its usual accuracy and completeness. No pains have been spared to bring the new edition of the "Local Government Annual" thoroughly up to date. The main portion of the book is devoted to the directory, which gives the names and addresses of the chief officials of all corporations, London borough councils, county councils, boards of guardians, urban and rural district councils, county and borough asylums, etc., throughout the kingdom, as well as a list of the city companies of London. A feature which will be found useful is the insertion of the names of the chairmen of committees in the metropolitan boroughs, also the chairmen of the London County Council committees. There is much useful information relating to baths and washhouses, and electric light undertakings in the boroughs of London, and the abstract of the local government legislation of 1910 cannot fail to be of service. There is also a complete list of all the parks and open spaces of the Metropolis, with the local authorities controlling them. The volume is one which is indispensable to all persons connected with local government, whether as members of public bodies, officials, or contractors and manufacturers.

"Burdett's Hospitals and Charities for 1911" stands without rival as the year-book of philanthropy and the hospital annual.⁴ Sir Henry Burdett has raised his "directory" to such a pitch of perfection that

¹ "Medical Guide through the Chief Watering-places and Health-resorts, Sanatoria and Factories of Therapeutic Articles of Germany and other European Countries." Edited by Harold Morré, M.D. Second edition, pp. 153, with illustrations. Berlin: Eugene Schachtel. 1910.

² "The People's Insurance." Explained by the Chancellor of the Exchequer, the Right Hon. David Lloyd George, P.C., D.C.L., LL.D. (Bangor), M.P. Pp. 161. London, New York, and Toronto: Hodder and Stoughton. 1911. Price 1s. net.

³ "The Local Government Annual and Official Directory for 1911." Edited by S. Edgecumbe Rogers. Twentieth year of publication. Pp. 296. London: *The Local Government Journal Office*, 27a, Farringdon Street, E.C. 1911. 1s. 6d.

⁴ "Burdett's Hospitals and Charities, 1911." By Sir Henry Burdett, K.C.B., K.C.V.O. Pp. 1019. London: The Scientific Press, Ltd., 28 and 29, Southampton Street, Strand, W.C. 1911. Price 10s. 6d. net.

the task of the reviewer seems little more than a work of supererogation. The volume is, in fact, a monument of carefully-organized industry and systematization. It provides a review of the present position, requirements, methods of management, revenue and expenditure, of our chief charities. It is a complete directory to British, American, and Colonial hospitals and asylums, medical schools, nursing and convalescent institutions, religious and benevolent establishments, and dispensaries. Readers of this Journal will do well to note that a special list, alphabetically arranged, is given of the chief sanatoria for consumptives existing in this country. In view of the increasing interest which is now being taken in sanatoria, the editor would be well advised to arrange for an extension of this section and a grouping of all sanatoria, private, public, and municipal, under counties. The book is one which should have a place on every doctor's table, and should be available for all comers in every public library.

A work which has recently reached us, written by the Secretary of the Chicago Department of Health, deserves to be known by health lecturers and visitors in this country.¹ The opening sentences of the "foreword" explain its purpose and indicate something of its terse, direct, convincing style: "The greatest wealth is health. The health of a people is its most precious asset. Health is priceless and yet without price. Therefore health-knowledge, the knowledge that enables us to avoid needless sickness, is without doubt the most valuable knowledge we can have. In 'Health Hints and Health Talks' this sort of information is given in language so plain and simple that all may understand and profit thereby." The essay composing this sensible little manual was originally published in newspaper form as a part of the Educational and Publicity Works of the Chicago Department of Health. We commend the little volume to the notice of Medical Officers of Health and all other missionaries of the gospel of physical righteousness.

The last volume of the "Transactions" of the American Pediatric Society contains twenty-nine valuable papers on subjects relating to the study of morbid childhood.² Strange to say, tuberculosis receives but little attention. There is, however, a suggestive paper by Dr. C. H. Dunn on "The Cyto-diagnosis of Tuberculous Meningitis and the Possibility of Recovery." The volume is one which should be read by all pediatricians.

"The Agricultural and Horticultural Association," under the guidance of its energetic managing director, Mr. Edward Owen Greening, is accomplishing a splendid work in stimulating open-air industry by the encouragement of gardening, small holdings, the cultivation of flowers and crops. The "One and All Gardening" Year Book for 1911 indicates something of the spirit and wisdom of this pioneer work, and we commend it to the notice of all lovers of gardens and advocates of the open-air life.³ It will be of special interest

¹ "Health Hints and Health Talks." By E. R. Pritchard. Pp. 153. Chicago: The Reilly and Britten Company. 1911.

² Transactions of the American Pediatric Society. Twenty-second Session. Edited by Linnaeus Edford La Fétra, M.D. Vol. xxii., pp. 339. New York: E. B. Treat and Co. 1911.

³ "One and All Gardening, 1911." Edited by Edward Owen Greening. Pp. 120, with illustrations. London: Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C. 1911.

to medical school officers and teachers practically interested in the establishment and management of school gardens and open-air schools.

Mr. Walter Gray Ross, by the issue of the new edition of his attractive studies on small houses, has provided the ordinary householder with a manual which should arouse a divine discontent with inartistic, non-hygienic habitations.¹ By means of coloured illustrations, reproductions from photographs, and drawings in black and white, and well-arranged plans, together with suggestive and practical text, the author indicates how really effective and efficient country and suburban homes may be provided at strictly reasonable prices. Many doctors, meditating the building of a house, will find this volume just the one they are looking for.

The tuberculosis problem is closely connected with the housing problem, and all movements making for improved town-planning and a more hygienic construction of dwellings are to be welcomed. The Exhibition at Romford Garden Suburb, Gidea Park, Essex, should be visited by those interested in the building of economic and sanitary homes. It seeks to demonstrate to housing and town-planning authorities, to builders, and to the public generally, the improvement in modern housing and building, due to the advance of scientific knowledge, the revival of the arts and crafts, and the progress of the Garden Suburb Movement, and by so doing to assist in raising the standard of housing, not only in the outer Metropolis, but throughout Great Britain. An admirable and elaborately-illustrated handbook has been prepared, and merits careful study.²

"The Annual Charities Register and Digest" for 1911 has just been issued, and provides an up-to-date and thoroughly reliable and, we might truthfully add, indispensable reference year-book for all social workers.³ The Editor of THE BRITISH JOURNAL OF TUBERCULOSIS contributes the communication on "Tuberculosis and the Tuberculous" to the series of "Articles on Special Branches of Charitable Work." The volume provides a useful directory to sanatoria and other institutions dealing with consumptive and other tuberculous cases.

The new illustrated catalogue of Messrs. Schall and Son, will be of interest to all medical practitioners employing electro-medical appliances.⁴

¹ "Some Small Houses." By Walter Gray Ross, A.R.I.B.A. Second edition, revised and enlarged. Pp. 94, illustrated, with frontispiece in colour and 90 reproductions of photographs and black and white drawings. London: The Homeland Association, Ltd., 15, Bedford Street, Strand, W.C. 1910. Price 2s. 6d. net.

² "The Hundred Best Houses: The Book of the Exhibition of Houses and Cottages, Romford Garden Suburb, Gidea Park." Pp. 150, with plans and illustrations. London: Printed for the Exhibition Committee, 33, Henrietta Street, W.C. 1911. Price 1s. net.

³ "The Annual Charities Register and Digest; being a Classified Register of Charities in or available for the Metropolis, together with a Digest of Information respecting the Legal, Voluntary, and other Means for the Prevention and Relief of Distress and the Improvement of the Condition of the Poor; an elaborate Index, and an Introduction, 'How to help Cases of Distress.'" By C. S. Loch, Secretary to the Council of the Charity Organization Society, London. Twentieth edition. Pp. ccclxxvi+706. London: Longmans, Green and Co., 39, Paternoster Row, E.C.; and the Charity Organization Society, Denison House, Vauxhall Bridge Road, London, S.W. 1911. Price 5s. net.

⁴ "Electro-Medical Instruments and their Management." By Schall and Son, 71 and 75, New Cavendish Street, London, W. Twelfth Edition. Pp. 232. Bristol: John Wright and Sons, Ltd. 1911. Price 1s.

PREPARATIONS AND APPLIANCES.

FORMALIN DISINFECTION.

In the prevention of tuberculosis one of the most important procedures is that which is directed to the destruction of all infective material. While, however, much attention is often devoted to the safe disposal of sputum and other tuberculous discharges, the clothing and rooms of the consumptive are commonly neglected. Doubtless there have been difficulties in the past in providing for the adequate disinfection of apartments inhabited by consumptive patients; but with the improvements which have taken place recently in the construction and working of reliable disinfecting appliances, this matter should receive the fullest attention which its importance demands. The long-established firm of W. G. Lacy and Co., the well-known experts in disinfection methods, have introduced an excellent form of FORMALIN LAMP FOR DISINFECTION. This ingenious, simple and strong apparatus consists of a water-jacket, with receptacle for the formalin disinfecting tablets which is encased in a metal casing, and provided with a reliable lamp. Unless formalin vapour is accompanied by a certain amount of moisture, the penetration and sterilizing action is considerably restricted. By means of "Lacy's Formalin Lamp," an effective means has been provided for formalin disinfection. It obviates the use of a spraying apparatus, secures the safe and thorough volatilization of the formalin gas, prevents polymerization, and, while allowing for thorough disinfection, does not cause damage to the contents of the room. We are of opinion that this new appliance will be of great value in anti-tuberculosis work. Certainly every sanatorium should be provided with a lamp, and all public health authorities will do well to supply their officers with outfits.¹

A NEW VACUUM FLASK.

Patients undergoing the open-air treatment, as well as travellers for health and pleasure, cyclists, motorists, pedestrians, and other lovers of the open road, will find a vacuum flask an essential of their equipment. In winter it is invaluable in retaining the heat in hot drinks, and in summer it provides a convenient means for keeping beverages cool and refreshing. For travellers it is indispensable. Messrs. Boots have favoured us with a specimen of their new VACUUM FLASK, which is a remarkably inexpensive and yet thoroughly efficient one. It possesses several points of exceptional value. It is

¹ The lamp is supplied at prices varying from 15s. to £2 11s. 6d., according to size, etc.; formalin disinfecting tablets are available in one pound tins, at 5s. per pound, carriage paid. Full particulars may be obtained from the inventors, Messrs. W. G. Lacy and Co., St. John's Wharf, Carnwath Road, Fulham, London, S. W.

provided with a bayonet-fastening which, whilst holding the flask firmly together, allows of its being taken to pieces for sterilizing and cleansing purposes, by simply raising the small catch at the side and turning round the body of the flask and pulling the same out. The cork buffer inside the flask at the bottom minimizes the chance of breakage. The vacuum, which is made of the highest quality glass, is said to be superior to the vacuums used in the old-fashioned and more expensive Vacuum Flasks. The cup is also of an extra large size, and the low price brings it within the reach of everyone.¹

HEAD-DRESS FOR THE OPEN-AIR LIFE.

Messrs. W. C. Leonard and Co., the well known American experts in clothing and equipment for the open-air life, have introduced an admirable form of head-gear which they claim is a "three-in-one cap," and can be worn as a helmet, a dress-cap, or a head covering with visor down. The features of this ingenious covering are shown



A COMBINATION WOOL HEAD-DRESS FOR SANATORIUM PATIENTS.

in the annexed figures. The cap is only 5 ounces in weight, warm, being made of the finest angora wool, and is knitted in one piece, with no seams or crown band to produce irritation. It may be obtained in various colours—grey, fawn, seal, brown, and white. These caps have proved very popular in America, and deserve to be better known in this country. For patients undergoing open-air treatment, especially during winter months, this headgear is ideal.²

¹ The Vacuum Flask cost 3s. 11d., and we are informed can only be obtained at the branches of Boots, Cash Chemists, who are the sole agents for the United Kingdom. Full particulars of this ingenious contrivance may be obtained on application to Boots, Cash Chemists, 38, Long Lane, The Borough, London, S.E.

² The above cap will be sent post paid for \$1.50, and particulars of other equipment for open-air living will be forwarded on application to The Leonard Stores, Saranac Lake, New York, U.S.A.

HYGIENIC PAPER DRINKING-CUPS.

The American Water-Supply Company of New England (Maine) has favoured us with specimens of their very ingenious and useful ASEPTIC PAPER DRINKING-CUPS. These contrivances deserve to be better known in this country. In the United States they appear to be extensively used by dentists, and in dental practice they must evidently go far to secure hygienic righteousness. We believe, however, that many medical superintendents of sanatoria would welcome the introduction of these drinking-cups into sanatorium practice in this land. Certainly for some consumptive cases, and other patients such as those in which the mouth, throat and larynx are extensively involved with tuberculosis, these hygienic drinking-vessels offer manifest advantages. The cups are composed of stout, smooth paper, and are well shaped, convenient to use, and generally attractive. They are made to fit into a metal cup-holder, and a considerable number of cups can be kept protected and absolutely clean in position ready for use by means of a neatly-constructed glass-covered bracket holder. We commend these novel drinking-cups to all interested in the prevention of tuberculosis and other forms of infection.¹



ASEPTIC PAPER DRINKING-CUP IN METAL HOLDER.

BASKET CHAIRS FOR SANATORIA.

The Dryad Cane Works of Leicester have succeeded in demonstrating that artistic skill and hygienic requisites are not incompatible. Hitherto so many of the contrivances for sanatorium furnishing and the conduct of open-air methods of life have been, if not actually clumsy and ugly, in only too many instances inartistic and unattractive. Now, however, charming garden furniture and hammock and other forms of chairs of basket-work are available. We have recently had an opportunity of testing one of the DRYAD HAMMOCK CHAIRS, which are admirably adapted for use in private sanatoria or by patients in their own homes.² These chairs are made of strong natural cane, which is very durable for outdoor use, and will stand a considerable amount of rough usage and exposure to wet without injury. The chairs are designed to provide the maximum of comfort and at the same time they are particularly pleasing to the eye and harmonize perfectly with the restful surroundings of a properly constituted garden.

¹ Full particulars of these cups will be sent on application to the American Water-Supply Company, 251, Causeway Street, Boston, U.S.A.

² Full particulars and pictures of the Dryad Hammock and other Chairs and Outdoor Furniture will be provided on application to Mr. Harry H. Peach, the Dryad Cane Works, Leicester.

THE COLLECTION OF CLINICAL RECORDS.



THE RONEO CLIPLESS FASTENER.

Among the recently introduced time and labour saving contrivances the RONEO CLIPLESS FASTENER must not be overlooked.¹ It is a most ingenious contrivance, made of the best tool steel, and of first-class workmanship throughout, which cuts, laces, and binds papers together speedily and with the greatest ease. From two to ten sheets of paper can be fastened together without the use of pins, clips, wire staples, or any other form of fastener. The paper itself forms the fastening, and yet at the same time no part is destroyed. The appliance can lie on the desk or table always ready for use; there is nothing to get out of order; a slight pressure on the handle is all that is required to accomplish the purpose of this clever clipless clip. Its general appearance is indicated in the accompanying

illustration. As will be at once seen, the appliance will be of much service in every kind of office. It will be particularly useful for attaching enclosures to letters, fixing cheques to invoices and statements, connecting copies of replies to inward correspondence for filing, binding sketches, designs, specifications, and the like. Having thoroughly tested this fastener, we are convinced that it will be of considerable service to doctors, especially those in consulting practice or responsible for hospital, sanatorium, or other institutional management. Medical Officers of Health, school doctors, and all who have to deal with notes, charts, reports, etc., which have to be kept in orderly array, will find this new appliance greatly facilitates their work.

VERTICAL FILING.

In all forms of office work, and wherever notes, records, correspondence, and the like have to be kept in orderly array, ready for rapid reference, some form of filing system is essential. We know of no better method for classifying papers than is provided by the so-called vertical file. In medical practice this method of grouping case reports, charts, diagrams, and other material pertaining to a patient's history and progress, is rapidly replacing the old-fashioned, inconvenient, and very cumbersome case-books. In hospital, sanatorium, and institutional work, and for the purposes of medical school inspection, some form of vertical file arrangement is indispensable. Messrs. George Waterston and Sons, of Edinburgh, have drawn our attention to a vertical filing cabinet which they are supplying to doctors and others at exceptionally low rates.² Each "unit" will

¹ The Roneo Clipless Fastener is supplied by Roneo, Ltd., 26, Holborn Viaduct, London, E.C. Price 15s.

² One "unit" costs only 17s. 6d. each, and cornice and case are supplied at 5s. each. The system thus allows of indefinite expansion and any form of arrangement which may be most convenient. Messrs. George Waterston and Sons, 33 and 35, George Street, Edinburgh, will be glad to send full particulars of their filing outfits to any of our readers on application.

hold upwards of 5,000 letters. For any medical practitioner, or for an institution desirous of commencing the grouping of records in accordance with modern methods, this opportunity should not be missed.

"HALAKONES."

Under the designation of "HALAKONES" Mr. Frank A. Rogers has introduced a new and promising form of prophylactic and therapeutic agent, for which we venture to prophesy a future of considerable popularity and service.¹ "Halakones" are small cones of stiffened gauze, loosely filled with absorbent material, which can be treated with medicaments of various kinds. They are constructed to fit the nasal vestibule in a way which necessitates that inspired air must pass through the medicated medium. This ingenious invention provides a novel and unique method of medicating the naso-pharyngeal, laryngeal, and bronchial passages. These cones can be worn at night, so permitting the continuance of treatment during sleep. They may be equally well worn during the day, as they are invisible. Primarily introduced for the prevention and relief of hay-fever, "Halakones" may also be employed in the treatment of other disorders by dry inhalation, and are likely to be of service in some cases of pulmonary and laryngeal tuberculosis. "Halakones," when charged with a germicide, afford means for the arrest of certain forms of infection. If the mouth be kept closed, all inspired air must pass through the "Halakone." They also encourage nasal breathing, and will be invaluable in protecting the naso-pharynx from dust, pollen, etc. Travellers in dry climates, motorists, and mill operatives, should try them. A useful form is one charged with coryfin (a new menthol ester), which produces the well-known menthol action, but, whereas the action of menthol is extremely evanescent, that of coryfin persists for hours. Other "Halakones" may be supplied containing menthol, pine oil, eucalyptus oil, terebene, guaiacol, and sal alembroth, or they can be filled at once to any requirement indicated by prescription. "Halakones" are made in three sizes—small, medium, and large—and are supplied in pocket boxes of 12 at 2s. 6d. Boxes of 100 for hospitals, sanatoria, and institutions are available at special prices. We are given to understand that samples will be gladly supplied to members of the medical profession on request.

CHINOSOL.

CHINOSOL has gained considerable popularity as a useful non-poisonous and non-corrosive antiseptic and deodorant. It has powerful germicidal properties, effectively corrects foul smells, affords a clear solution of uniform character in cold water, does not stain or injure the hands, linen, etc., is easily portable, retains its strength in any climate, and withal is inexpensive. The manufacturers of Chinosol have issued an interesting circular on the "Treatment of

¹ "Halakones" have been invented and are manufactured by Mr. Frank A. Rogers, the well-known pharmacist and manufacturer of medical sprays, 327, Oxford Street, London, W.

Pulmonary Tuberculosis by Intra-venous Injections of Chinosol with Formaldehyde," copies of which may be obtained on application to the firm.¹

BISMUTH GAUZE FOR TUBERCULOUS SINUSES.

In the dressing of tuberculous and other sinuses, iodoform has long held a position of well-merited popularity. It cannot be denied, however, that there are serious drawbacks to its employment in not a few cases. If, therefore, the new BISMUTH GAUZE which has been introduced accomplishes all that is claimed for it, much of practical service will have been attained. It is claimed that this preparation possesses all the valuable antiseptic and deodorant properties of iodoform, but is free from obnoxious odour and risk of poisoning. In dealing with some tuberculous lesions of a chronic and indolent character, it seems likely that bismuth gauze will be of considerable value.²

HYGIENIC UNDERWEAR.

The Deimel Fabric Company have introduced a series of sanitary garments which will be found of much service for patients undergoing sanatorium treatment and others living the open-air life. Linen-mesh underwear was originally introduced by Dr. Deimel in 1894, and is not only scientifically sound, but has justified itself by long and varied experience. Dr. Deimel's underwear is made of a two-ply thread of superior linen warp combined with a fine strand of abassi.³ Dr. Leonard Williams, in his booklet on "Tubercle and Underwear," well says: "The necessity for pure air is gaining recognition, but it will not carry us far until we have recognized the equal, if not greater, necessity for rational and physiological treatment of the skin." THE DEIMEL UNDERWEAR certainly provides clothing which is physiologically right, and which, will be of considerable assistance in dealing with the subjects of tuberculosis and other pathological states.

SANITARY SMOKING.

Much ingenuity has been displayed in attempts to construct hygienic pipes which should rob smoking of its deleterious influences. The HYGIENIC DOUBLE-BOWL PIPE is the latest model.⁴ It consists of two bowls, the one nearest the stem serving as a cooling and filtering chamber, containing cotton-wool. The pipe certainly offers advantages, and, moreover, it is small and convenient for the pocket.

¹ The Chinosol Hygiene Company (B. Kühn and Co.), 16, Rood Lane, London, E.C.

² The "tabloid" form of Bismuth Gauze is supplied in three widths—1, 2, and 3 inches—each 1 yard in length. Full particulars may be obtained on application to Messrs. Burroughs Wellcome and Co., Snow Hill, London.

³ Full particulars regarding Dr. Deimel's Underwear, together with a booklet on "The Protective Feature of Underwear," will be sent on application to the Deimel Fabric Company, 10-12, Bread Street, London, E.C.

⁴ Full particulars will be sent on application to the patentees, The Hygienic Double-Bowl Pipe Company, 1, Clement's Inn, Strand, London, W.C. The price varies from 2s. 6d. to 7s. 6d.

NOTES.

THE SEVENTH INTERNATIONAL CONGRESS AGAINST TUBERCULOSIS.

THIS world-gathering of experts in the anti-tuberculosis campaign meets at Rome, September 24 to 30, 1911, under the distinguished patronage of their Majesties, the King and Queen of Italy. On September 23, at 9 p.m., there will be a reception of the members of the Congress in the Castle of St. Angelo. On Sunday, September 24, at 10 a.m., will be the formal inauguration in the Grand Amphitheatre of the Augusteum. On Monday, September 25, and throughout the week sectional meetings will be held. The following information which we have just received will doubtless be of service to many of our readers :

Arrival at Rome.—Members will find at the railway-station at Rome, on and after September 23, an Inquiry Office in connection with the Congress, where they will be able to obtain all necessary information.

Lodging.—The Organizing Committee is making arrangements, of which it will give all necessary details in suitable time, in order to facilitate the members in the search and in the distribution of accommodation in the hotels of the city.

Reduced Railway Fares.—Members' tickets for the Congress do **not** give them the right to the reduced fares on the Italian railways. But during the Anniversary celebrations of the present year booklets containing eight tickets are on sale at a reduction on the fares from 40 to 60 per cent. Of these eight tickets, one can be used only for the journey from the frontier to Rome ; but the other seven are valid for any journey and any destination in Italy. To obtain this booklet of tickets, which offers such advantages to the tourist, 10 francs 50 centimes have to be paid. Members can purchase it at the frontier stations. But the Secretary of the Congress will forward it to them on application before they begin their journey. If this is wished, the special form should be sent him, with as many sums of 10 francs 50 centimes as the number of ticket booklets at reduced fares required. The reductions granted by the Italian railways enable the journey from the frontier stations to Rome to be made for the fares given below.

The following railways grant reduced fares : the South-Eastern and Chatham Railway ; and London Brighton and South Coast Railway (between London and Paris) ; the Constantinople-Salonica Railway (50 per cent.) ; the Jaffa-Jerusalem Railway (50 per cent.) ; the Oriental Railway Company ; the Roumanian Railways (50 per cent.). The following in Portugal : the Royal Portuguese Railway Company ; the National Railway Company ; the State Railways, and the Valle dal Vonga Railway (50 per cent.) ; and the Hellenic Railway Company (50 per cent.). These reductions

can only be obtained by holders of the special tickets, which the Secretary will send on receipt of the 10 francs 50 centimes for the purchase of the booklets of railway tickets. The National Navigation Company (Società Nazionale di Servizi Marittimi) allows members of the Congress on the international lines the fares paid by Government employes travelling on official business, and on the Italian local lines 60 per cent. reduction on the ordinary fares (food not included). Passengers must land at Naples only, except on the international lines, when they may also land at Brindisi and Ancona. The Navigation Company of Apulia (Società di Navigazione Puglia) grants a reduction of 50 per cent. on the ordinary fares (food not included) to all members of the Congress who sail for Italy from Dalmatian, Montenegrin, Albanian, and Epirot ports, issuing return tickets available for one month all the time the Exhibition at Rome is open.

| | | First Class. | Second Class. | Third Class. |
|-------------|-----|--------------|---------------|--------------|
| Ventimiglia | ... | 35.65 | 23.20 | 14.85 |
| Modane | ... | 39.40 | 25.85 | 16.65 |
| Domodossola | ... | 37.60 | 24.60 | 15.85 |
| Chiasso | ... | 36.40 | 23.70 | 15.25 |
| Luino | ... | 37.10 | 24.25 | 15.60 |
| Ala | ... | 36.30 | 23.95 | 15.40 |
| Pontafel | ... | 39 | 25.65 | 16.50 |
| Cormons | ... | 37.95 | 24.90 | 16 |

Admission to the Congress.—Every member on his arrival in Rome should make his way at once to the Secretary's office, to receive the necessary badges, papers, tickets of admission to social gatherings, etc. He should also present his Congress ticket to be endorsed, which will be returned to him on payment of the entrance fee. Intending members who reach Rome without having previously declared their adhesion to the Congress may do so at the Secretary's offices either before or during its meeting.

Postal and Telegraphic Information.—There will be an Inquiry Department, in four languages, at the Offices of the Congress, where members will be able to obtain all the information necessary to them during their stay in Rome. Members may have their letters addressed as follows to the Congress Offices: "Congresso Tuberculosi, Roma," to avoid the trouble of going for them to the General Post Office. The telegraphic address of the Secretary and the Congress is from the present date, "Tuberculosis, Roma."

Tours and Excursions.—During the Congress excursions will be organized in the environs of Rome—e.g., to Tivoli, the Castelli Romani, Subiaco, Veii, Palestrina, Assisi, Loreto, and Monte Cassino. Members will find programmes and time-tables of these excursions in the Offices of the Congress. Special arrangements have also been made for carriages and guides to take groups of members to visit the antiquities of Rome and the Exhibition.

Those intending to attend the Congress should send their member's entrance fee (25 francs) and make formal application for special

railway ticket (10 francs 50 centimes), which will enable the holder to avail themselves of the reduced fares granted to members. Full particulars may be obtained on application to the Secretary of the Congress, 36, Via in Lucina, Rome.

PATHS OF PROGRESS.

On all sides there is evidence of an increasing determination to strive with greater scientific precision and a clearer understanding of economic conditions, and all other medico-sociological factors, for the ultimate extinction of tuberculosis. The problem is one of world-wide interest and concern, and some of the most astute minds in the most progressive of countries are devoting their energies to the tracking down of the enemy and its associates. The introduction of the Chancellor's Bill to secure a system of national insurance against invalidity is exercising a widespread beneficial influence in directing attention to the prevalence of tuberculosis and the immense national loss entailed by its ravages.

The patients of the Queen Alexandra Sanatorium at Davos, Switzerland, have started a journal of their own under the suggestive title of *The Chart*. Such an excellent example should be followed by sanatoria in this and other countries.

Messrs. A. and M. Zimmermann have favoured us with an English version of Professor Dr. Friedrich J. Rosenbach's paper on "A New Tuberculin," originally published in *Deutsche Medicinische Wochenschrift*, Nos. 33, 34, 1910. It is claimed that Rosenbach's tuberculin is produced by bio-chemical processes in the growth of the trichophyton holosericum album on living tubercle bacilli and their nutrient media.¹

The Jewish Board of Guardians in London do much to assist consumptive cases, and their recently-published report gives statistical data regarding the prevalence of tuberculosis among poor Jews.²

The Oxfordshire Association for the Prevention of Tuberculosis has opened a dispensary in connection with the Radcliffe Infirmary, and in their first report there are given particulars of the work accomplished.³

Dr. Herbert De Carle Woodcock has introduced what he describes as "the tuberculin blister reaction" for use in the diagnosis of tuberculosis. Messrs. Parke, Davis, and Co. provide the tubes of tuberculin for the reaction.⁴

Messrs. Allen and Hanburys have just issued a new edition of their admirable brochure on tuberculins.⁵ It will be found of much assistance to practitioners.

¹ Messrs. A. and M. Zimmermann, 3, Lloyd's Avenue, London, E.C., will be glad to supply our readers with full particulars of Rosenbach's tuberculin, which is manufactured by Messrs. Kalle and Co., of Biebrich-on-the-Rhine.

² Report of the Sanitary Committee of the Board of Guardians for the Relief of the Jewish Poor. 1910. Middlesex Street, London, E.

³ First Annual Report of the Oxfordshire Branch of the National Association for the Prevention of Tuberculosis (Secretary, Miss Price, 16, St. Giles, Oxford).

⁴ A leaflet fully describing the Woodcock Blister Reaction, together with full particulars regarding the tuberculin, will be forwarded on application to Messrs. Parke, Davis and Co., 50, Beak Street, Regent Street, London, W.

⁵ "The Tuberculins and their Uses as Diagnostic and Curative Agents." Sixth edition, with coloured plate. London: Allen and Hanburys, Ltd., 7, Vere Street, W. 1911.

In all parts of the world the necessity for seeking protection from tuberculosis and the burden brought by tuberculous dependents is being recognized. At a recent Conference of Medical Officers in Australia¹ it was agreed that "in respect of the immigration of persons suffering from consumption, it would be advantageous if the present law were extended in the direction of that which has force in the United States—viz., that cases which escape detection on entering the Commonwealth may be followed up for some time subsequent to admission, during which such cases could be dealt with as prohibited immigrants."

Dr. Marion B. Andrews has written a practical booklet descriptive of the so-called "class method" of dealing with consumptives.²

The Local Government Board for England and Wales, under the wise direction of its President, Mr. John Burns, and its Principal Medical Officer, Dr. A. Newsholme, has accomplished much in organizing forces for the more efficient care of the consumptive poor.³ The new powers provided this spring⁴ are already affording a considerable increase in opportunities for dealing with tuberculous cases, but the means whereby rational relief can be provided still remain lamentably inadequate.

Particulars have recently been sent us regarding "Pneumosan" (amyl-thio-tri-methylamine-chloride compound), introduced by Dr. Caesar Ballabene.⁵ It is administered by intramuscular injection.

The anti-tuberculosis campaign is now proceeding in all civilized countries. When the International Congress on Tuberculosis meets at Rome next September, representatives of over thirty national and provincial associations organized to fight tuberculosis will be present. Among the countries which will be represented are: The United States, Canada, Cuba, Trinidad, England, Wales, Ireland, Norway, Sweden, Denmark, Russia, Germany, Belgium, Holland, France, Switzerland, Portugal, Italy, Greece, Bulgaria, Hungary, Austria, New Zealand, Japan, Cape Colony, Argentina, Brazil, Chile, Newfoundland, Roumania, Uruguay, and Venezuela.

¹ Report of a Conference of Principal Medical Officers on Uniform Measures for the Control of Consumption in the States of Australia. Pp. 17. Melbourne: J. Kemp, Government Printer. 1911.

² "The Class Method of treating Pulmonary Tuberculosis." By Marion B. Andrews, M.D. Pp. 31. Dublin: Dollard, Printinghouse, Wellington Quay.

³ See Circulars issued to Councils of Metropolitan and other Boroughs and of Urban and Rural Districts, and also Guardians, Joint Committees, and Managers of Asylum and School Districts, December 18, 1908, respecting Public Health (Tuberculosis) Regulations. 1908. Also Memorandum by the Medical Officer of the Local Government Board on Administrative Measures against Tuberculosis. 1909.

⁴ Public Health (Tuberculosis) Regulations, March, 22, 1911.

⁵ Particulars furnished on application to the Pneumosan Chemische Fabrik, 157, Great Portland Street, London, W.

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